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AMERICAN SPIDERS OF THE GENUS ARGYRODES
(ARANEAE THERIDIIDAE)

BY HARRIET EXLINE AND HERBERT W. LEVI

WITH FIFTEEN PLATES

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No. 2 — *American Spiders of the Genus Argyrodes*
(*Araneae, Theridiidae*)

BY HARRIET EXLINE¹ AND HERBERT W. LEVI

Spiders of the genus *Argyrodes* are mostly tropical and subtropical. Some, perhaps all, live as commensals in webs of larger spiders, especially in webs of *Nephila clavipes* (Linnaeus) and species of *Gasteracantha* and *Argiope*, and sometimes of *Latrodectus*, *Agelenopsis*, *Allepeira* and others. Often large numbers of individuals, sometimes including more than one species, are found in the same host web. Twenty-three specimens including *A. elevatus*, *A. cochleaforma* and *A. cordillera* were collected from one *Gasteracantha* web near Baños, Ecuador (Exline, 1945). A pair of *A. globosus* and a pair of *A. cancellatus* were collected by Exline in a web of *Nephila clavipes* near Donaldsonville, Louisiana, in 1959. *Argyrodes* usually feed on small insects in the host web, the small spiders and small insects apparently being unnoticed by the large host. However, *Argyrodes* have been observed a few times to prey on their hosts. Exline watched *A. fictilium* feed on its *Araneus* host, and Archer (1946) reported *A. fictilium* preying on *Frontinella communis* (Hentz) in Alabama. Lamore (1958) observed *A. trigonum* attack and feed on a host *Allepeira lemniscata* (Walckenaer). *Argyrodes* may live in host webs without constructing any web of their own, but often they add fine lines between the spirals of an orb-web, and occasionally they live independently, making their own small theridiid webs.

Argyrodes species hang in the web upside-down with the front pairs of legs folded. They are usually inconspicuous, resembling seeds, pieces of bark, or lichen accidentally attached to the web. When disturbed they jump, usually sideways, and drop, leaving a line attached to the resting place.

Though the egg-cases are far more conspicuous than their makers, they are seldom preserved by collectors. They are beautifully constructed (Figs. 1-5) and are attached to the host web or to grasses or brush by strong threads. The shape is often characteristic. Urn-shaped cases are made by *A. elevatus*, *A. caudatus*, *A. cancellatus* (Fig. 5) and their relatives, and these

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cannot be distinguished. Several egg-cases with a female *A. fictitium* (collected by W. J. Gertsch, W. Ivie, and T. B. Kurata in Ontario) included two or three oval-shaped, one elongate, one nearly round, and one spindle-shaped. The attractive spindle-shaped egg-cases of *A. projiciens* (Fig. 1) have been collected by A. M. Chickering, H. Exline and others. A very long, purse-like egg-case, filled with young spiderlings, was collected with a female *A. attenuatus* by A. M. Chickering in Panama (Fig. 3). The slightly elongate, urn-shaped egg-case of *A. trigonum* has been known since Emerton's figures of it were published in Hentz (1875); it is somewhat variable. The cases of its relative *A. baboquivari*, collected in Arizona by W. J. Gertsch, are similar but larger (Fig. 2).

Males of many species of *Argyrodes* have bizarre projections or other modifications of head and clypeus. Nearly all forms bear humps on the abdomen, or the abdomen is extended beyond the spinnerets. In a few species of the *Ariamnes* group, the abdomen is so greatly prolonged as to be vermiform. It may also be movable, perhaps camouflaging the spider as an inch-worm. The abdomen of *A. trigonum* and its relatives is also extended and can be moved up or down or sideways. In many species the abdomen is dull and spotted, in others black to reddish, streaked or studded with brilliant silvery spots, or in a few species nearly all silvery.

This revision has attempted to clarify the taxonomy of *Argyrodes*. There are keys, and a description of each species, with figures and a brief diagnosis, to help in identification. Distribution maps and records of available collections are included.

We include *Rhomphaea* and *Ariamnes* in *Argyrodes*, though with some misgivings due to resultant changes in nomenclature. Simon (1893) placed all three genera in the group (subfamily) Argyrodeae, separated by differences in eye arrangement, clypeal modification and relative length of metatarsi. We have found that these characters do not separate American species. Usage of the three generic names, moreover, shows considerable confusion. Many of the larger *Argyrodes* have been described as *Rhomphaea*, and species have been placed indiscriminately into either *Ariamnes* or *Rhomphaea*. *Argyrodes fictitium*, which is close to the type species of *Rhomphaea*, probably is closer to the *Ariamnes* group than are the other American species of *Rhomphaea*. The genitalia of the *Ariamnes* group are structurally very similar to those of the *Argyrodes argyrodes* group of species. Characters that separate *Rhomphaea-Ariamnes* from *Argyrodes* would fragment the

latter group also. We have, therefore, divided *Argyrodes* into species groups on the basis of head and clypeus shape of the male and shape of abdomen and genitalia, rather than into subgenera, which would add to the nomenclatural burden.

The revision is based on several large collections and many smaller ones made available to us through the kindly cooperation of individuals and museums. The most important collection, from Panama, was contributed by Dr. A. M. Chickering, who also provided a splendid collection from Jamaica (deposited in the Museum of Comparative Zoology). Dr. W. J. Gertsch lent us the large collection in the American Museum of Natural History. The collection of the Museum of Comparative Zoology added specimens and data from the eastern United States and the West Indies, and Exline's collection supplied material from Peru, Ecuador, and the midwestern United States. Other collections of importance include that of the California Academy of Sciences from western South America, lent by Dr. E. S. Ross; the British Museum (Natural History), lent by Dr. G. Owen Evans and D. Clark; the Muséum National d'Histoire Naturelle, Paris, lent by Prof. M. Vachon; the Senckenberg Museum, lent by Dr. O. Kraus; the Institut Royal des Sciences Naturelles de Belgique, lent by Mr. J. Kekenbosch; the University of Utah, lent by Dr. R. V. Chamberlin; and the Zoologische Sammlungen des Bayrischen Staates, lent by Dr. W. Engelhardt; and smaller collections by Dr. A. F. Archer and Mr. J. Beatty.

Our identification of species is based on examination and comparison with type specimens wherever possible. Examination of types in European institutions by H. W. Levi, during the summer of 1958, was made possible through the sponsorship of the National Science Foundation (Grant no. G-4317), and through the hospitality of Prof. M. Vachon of Paris, Dr. G. Owen Evans and Mr. E. Browning of London, and Prof. G. C. Varley of Oxford. Other types were made available by Dr. W. J. Gertsch, American Museum of Natural History; Prof. A. Petrunkevitch, Yale University; Dr. R. V. Chamberlin, University of Utah; Prof. M. Birabén, Museo de La Plata, Argentina; Dr. A. Riedel and J. Prózyński, Polish Academy of Sciences, Warsaw; Dr. L. Forcart, Naturhistorisches Museum, Basel; Dr. P. E. Vanzolini and Dr. H. de A. Camargo, Departamento de Zoologia da Secretaria da Agricultura, São Paulo, Brazil; and the Zoological Institute of Bologna. Dr. Patricio Sanchez, Universidad Catolica de Chile obtained a rare publication for us. Susan Kinnaird and Lorna Levi helped with editing the paper. Funds for the completion of

this study were supplied by the National Institutes of Health (Grant no. E-1944).

In this paper, literature records were used only in the few cases in which there was no doubt about their correct determination. Experience has demonstrated that a large proportion of spider names used in regional lists are misapplied and that the distributions summarized in catalogs are often erroneous. In our list of records the following abbreviations were used for European museums from which specimens were borrowed: BMNH, British Museum (Natural History); ISNB, Institut Royal des Sciences Naturelles de Belgique, Brussels; MNHN, Muséum National d'Histoire Naturelle, Paris; SMF, Senckenberg Museum, Frankfurt; ZSM, Zoologische Sammlungen des Bayerischen Staates, Munich.

ARGYRODES SIMON

Ariadne Doleschall, 1857, Nat. Tijdschr. Nederland Ind., vol. 13, p. 410.

Type species by monotypy *A. flagellum* Doleschall, 1857. Homonym of *Ariadne* Horsfield, 1826; *Ariadne* Agassiz, 1845.

Argyrodes Simon, 1864, Histoire Naturelle des Araignées, first edit., p. 253.

Type species by tautonymy *Linyphia argyrodes* Walckenaer. Homonym of *Argyrodes* Guenée, 1845.

Ariamnes Thorell, 1869, Nova Acta Reg. Soc. Sci. Uppsala, ser. 3, vol. 7, p. 37. New name for *Ariadne* Doleschall, 1857, preoccupied.

Rhomphaca L. Koch, 1872, Die Arachniden Australiens, pt. 1, p. 289. Type species by monotypy *R. cometes* L. Koch, 1872.

Conopistha Karsch, 1881, Berliner Ent. Zeitschr., vol. 25, p. 39. Type species by original designation and monotypy *C. Bona Dea* Karsch, 1881.

Faiditus Keyserling, 1884, Die Spinnen Amerikas, Theridiidae, pt. 1, p. 158.

Type species designated by Petrunkevitch, 1928, Trans. Connecticut Acad. Sci., vol. 29, p. 118, *Faiditus ecaudatus* Keyserling, 1884.

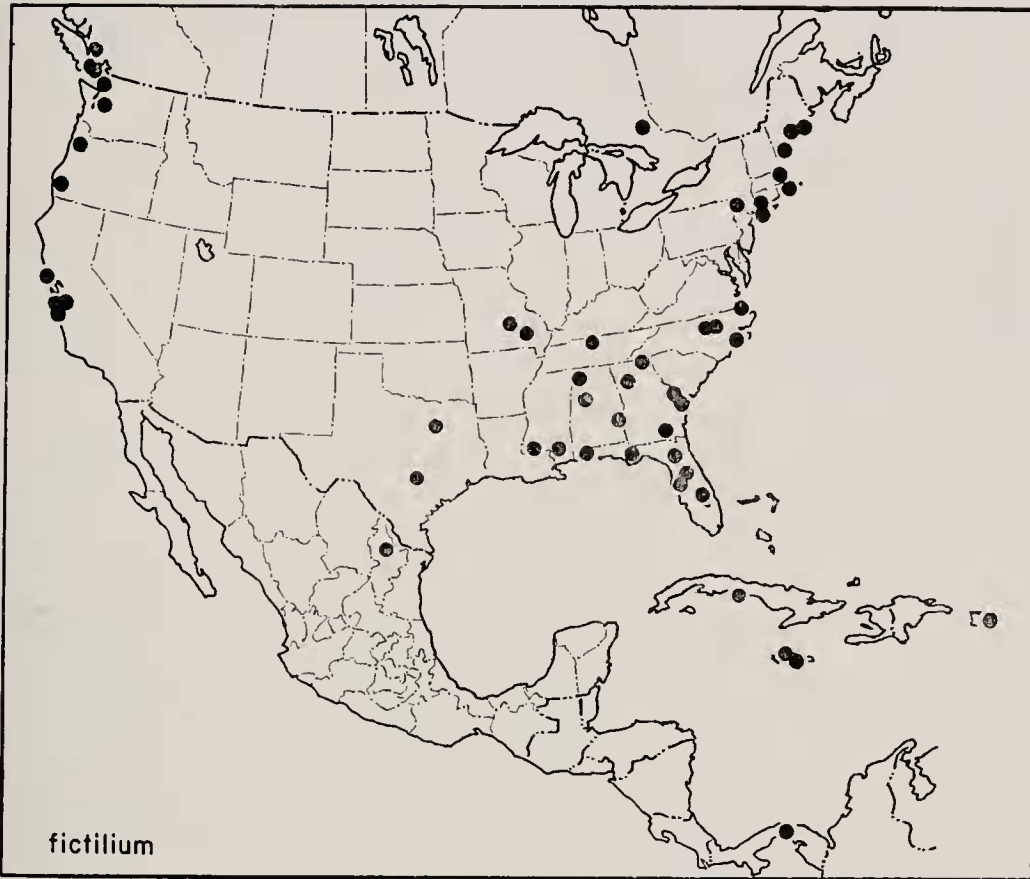
Bellinda Keyserling, 1884, *op. cit.*, p. 216. Type species by monotypy *Theridion cancellatum* Hentz.

Argyrodina Strand, 1928, Arch. Naturgesch., vol. 92, p. 42. New name for *Argyrodes* Simon, 1864, preoccupied.

Neospintharus Exline, 1950, Studies Honoring T. Kincaid, Univ. Washington Press, p. 112. Type species by original designation and monotypy *N. parvus* Exline, 1950.

Comments on nomenclature. Although the purpose of the International Rules of Nomenclature is to provide stability and universality of names, strict application of the rules often would work otherwise. The name of the genus revised in this paper is

an example. Because of the importance of stability, we have decided to use the generic name *Argyrodes*, although it is preoccupied by an older, unused homonym. An application to the International Commission on Zoological Nomenclature is being prepared to suppress the senior homonym of *Argyrodes*.

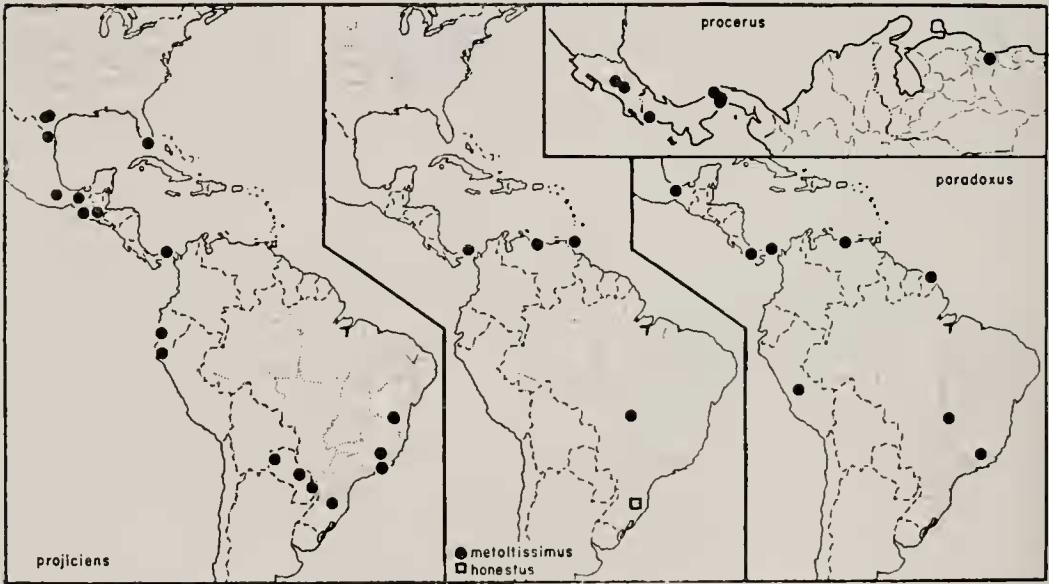


Map 1. Distribution of *Argyrodes fictilium* (Hentz).

Strand (1928) noted that *Argyrodes* was preoccupied and proposed the new name *Argyrodina*. *Argyrodes*, however, continued to be used for spiders until the 1930's. At that time *Conopistha* Karsch, 1881, with the type *C. bonadea* Karsch was recognized as a synonym of *Argyrodes*, and *Conopistha* has generally been used for this genus during the last 20 years. We now consider *Ariamnes* and *Rhomphaea*, both proposed before *Conopistha*, to be synonyms of *Argyrodes*. If we follow strictly the laws of priority the genus should be called *Ariamnes*. However, those who disagree with our synonymy may still consider *Conopistha* the correct generic name. Of the two recent catalogers,

Roewer uses *Argyrodina* (in his last volume he points out that *Conopistha* should have been used); Bonnet employs *Argyrodes*, strongly favored by usage.

The senior homonym *Argyrodes* Guenée, 1845, a moth of the family Perlididae, is a junior objective synonym of *Eucarphia* Huebner, 1825. *Argyrodes* Guenée is monotypic, the only species being *vinetella* Fabricius. *Eucarphia* Huebner contains three species, of which *vinetella* Fabricius is the type. Thus the name will not be available for a lepidopteran genus.²



Map 2. Distribution of *Argyrodes* *honestus* new species, *A. metaltissimus* (Soares and Camargo), *A. paradoxus* Taczanowski, *A. procerus* (O.P.-Cambridge), and *A. projiciens* (O.P.-Cambridge).

Usage and continuity of names strongly favor *Argyrodes*. The alternate choice would be *Ariamnes*, which has been used before for only a small group of poorly known species. Its synonymy, moreover, is to some extent a matter of opinion, so that its use might lead to instability.

Description. Carapace flat, posterior portion low, a transverse thoracic depression generally present. Eye region and clypeus high. Males with eye region, or clypeus, or both, modified with projections, humps, an open groove or seam below eyes, or with clypeus projecting ventrally (*A. fictilium*), or projecting and bearing a groove (*A. atopus*). Color generally uneven brownish

² Information supplied by Prof. W. T. M. Forbes and Dr. E. G. Monroe.

with irregularly distributed pigment. Chelicerae with two or three teeth on anterior margin, one or two posterior (Fig. 76), or a row of equal-sized denticles (each one with diameter less than one-quarter that of teeth). Sternum and lip entire. First leg longest, fourth second in length, third always very short. Fourth tarsus usually without a comb, but with a few serrated bristles. *Argyroides attenuatus* has serrated bristles on the pro-lateral side of the distal end of the tarsus. Comstock (1912, The Spider Book, Doubleday, Page & Co., fig. 324) illustrates a few



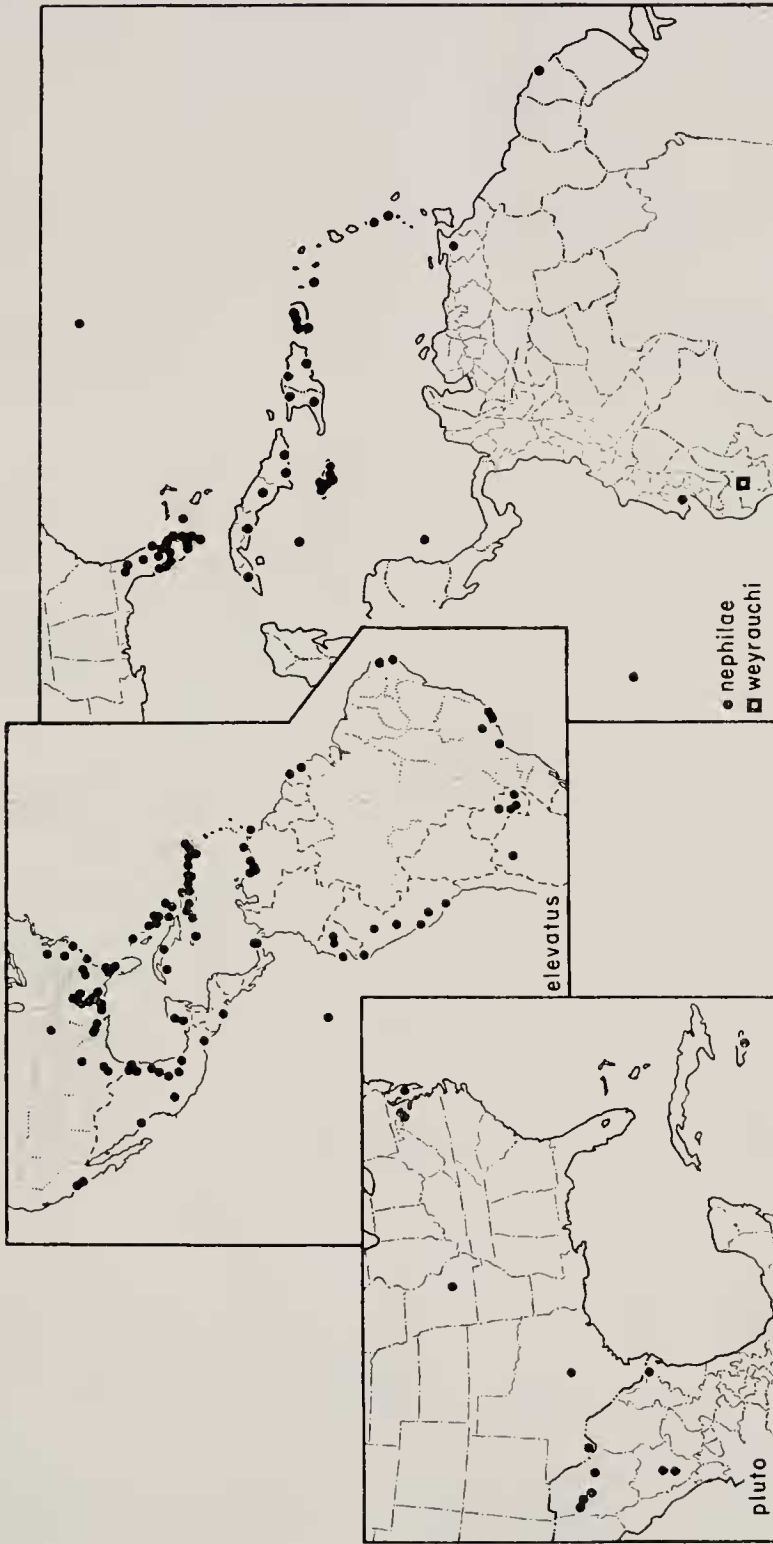
Map 3. Distribution of *Argyroides baboquivari* new species, *A. bicornis* O.P.-Cambridge, *A. concisus* new species, *A. furcatus* (O.P.-Cambridge), *A. obscurus* Keyserling, *A. parvus* (Exline), *A. rioensis* new species, *A. triangularis* Taczanowski, and *A. trigonum* (Hentz).

serrated bristles on the side of the distal end of the tarsus of *A. trigonum*. The tarsal comb, when present in other theridiids, is on the venter. Also unlike other theridiid spiders, the middle tarsal claw is longer than the lateral claws. Abdomen with tubercles, extended, vermiform, or sometimes higher than long, never spherical (except in males of *A. globosus*). Anterior border of abdomen with stridulating ridges in both sexes and a pair of stridulating areas on carapace. The small colulus has the setae shorter than the fleshy base (Fig. 77). Abdomen with uneven coloration, often with silvery patches or all silvery.

Palpi with median apophysis (M in Figs. 68, 120, 154, 406, 407), radix (R), conductor (C). The duct loops through the inconspicuous, weakly sclerotized median apophysis. The latter structure fits into the paracymbium (P). The radix may be an



Map 4. Distribution of *Argyrodes attenuatus* (O.P.-Cambridge), *A. haitensis* new species, *A. longissimus* (Keyserling), *A. mexicanus* new species, and *A. schlingeri* new species.



Map 5. Distribution of *Argyrodes elevatus* Taczanowski, *A. nephilae* Taczanowski, *A. pluto* Banks, and *A. weyrauchi* new species.

armlike sclerite between the embolus and the eymbium (Y) (Figs. 68, 120, 154), or a prominent ventral plate above the median apophysis (Figs. 406, 407). It is always sclerotized and is of diagnostic value, but often is partly transparent so that its outline is hard to see. The embolus is variously shaped: a complex sclerite in some species of the *Ariamnes* and *A. argyroides* groups (Figs. 120, 154); subtriangular in the *A. trigonum* group (Fig. 68); or with a distal thread-shaped portion in the *A. cancellatus* group (Figs. 406, 407). In the latter group, the embolus is partially hidden by the ventral radix. The eymbium is usually spoon-shaped, but is truncate in some *Ariamnes* and in all species of the *A. argyroides* group (Fig. 154).



Map 6. Distribution of *Argyroides atopus* Chamberlin and Ivie, *A. cochleaforma* (Exline), *A. cordillera* (Exline), *A. ecaudatus* (Keyserling), *A. fulvus* new species, *A. proboscifer* (Exline), *A. rossi* new species, and *A. sullana* (Exline).

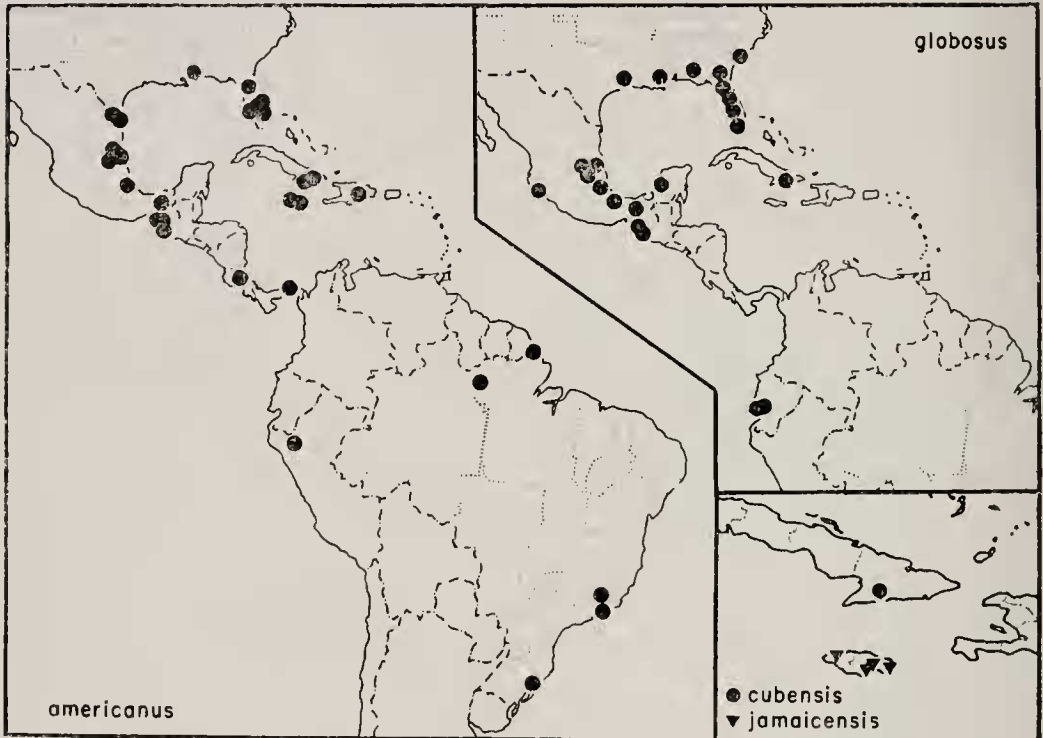
Epigynum a sclerotized plate, often covered by resinous material, which may be difficult to remove (except in the *A. cancellatus* group). Two spherical to oval receptacles, tube-shaped in the *Ariamnes* group. Ducts of variable length, generally of same diameter throughout. In some species of the *A. cancellatus* group the sclerotized ducts fuse.

In *Argyrodes* there is pronounced dimorphism of secondary sexual characters. Males may have setae-bearing projections in



Map 7. Distribution of *Argyrodes acuminatus* Keyserling, *A. altus* Keyserling, *A. amplifrons* O.P.-Cambridge, *A. arthuri* new species, *A. exiguus* new species, and *A. gertschi* new species.

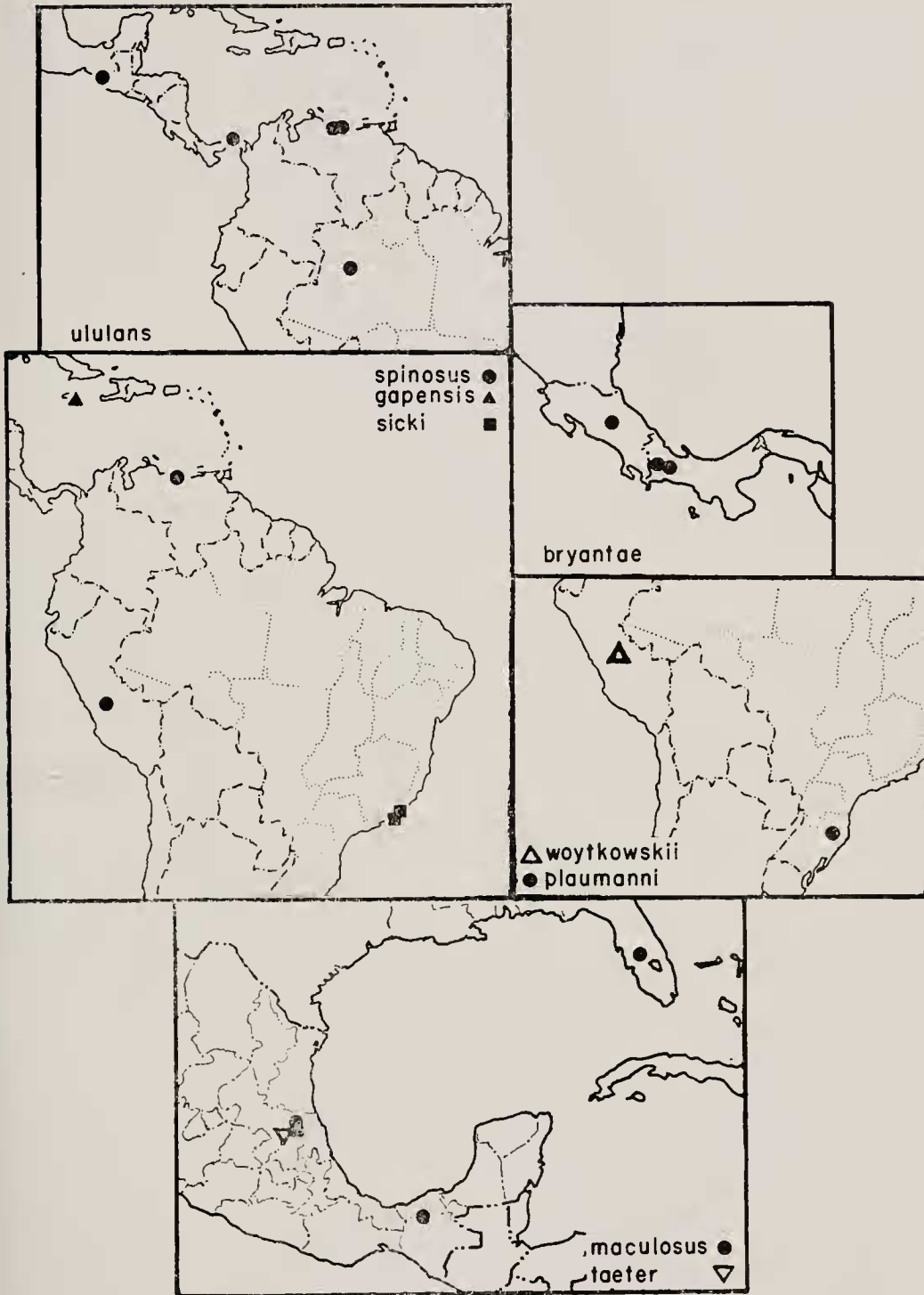
the eye region, clypeus, or both. In males the clypeus may be bulging, with a transverse seam, or may project below. The size and position of eyes often is different in females. The legs are usually considerably longer in males. Unlike most other theridiids, the males of many species are larger than the females, although the males are smaller in species of *Rhomphaea*, *Ariamnes*, and *A. trigonum* groups.



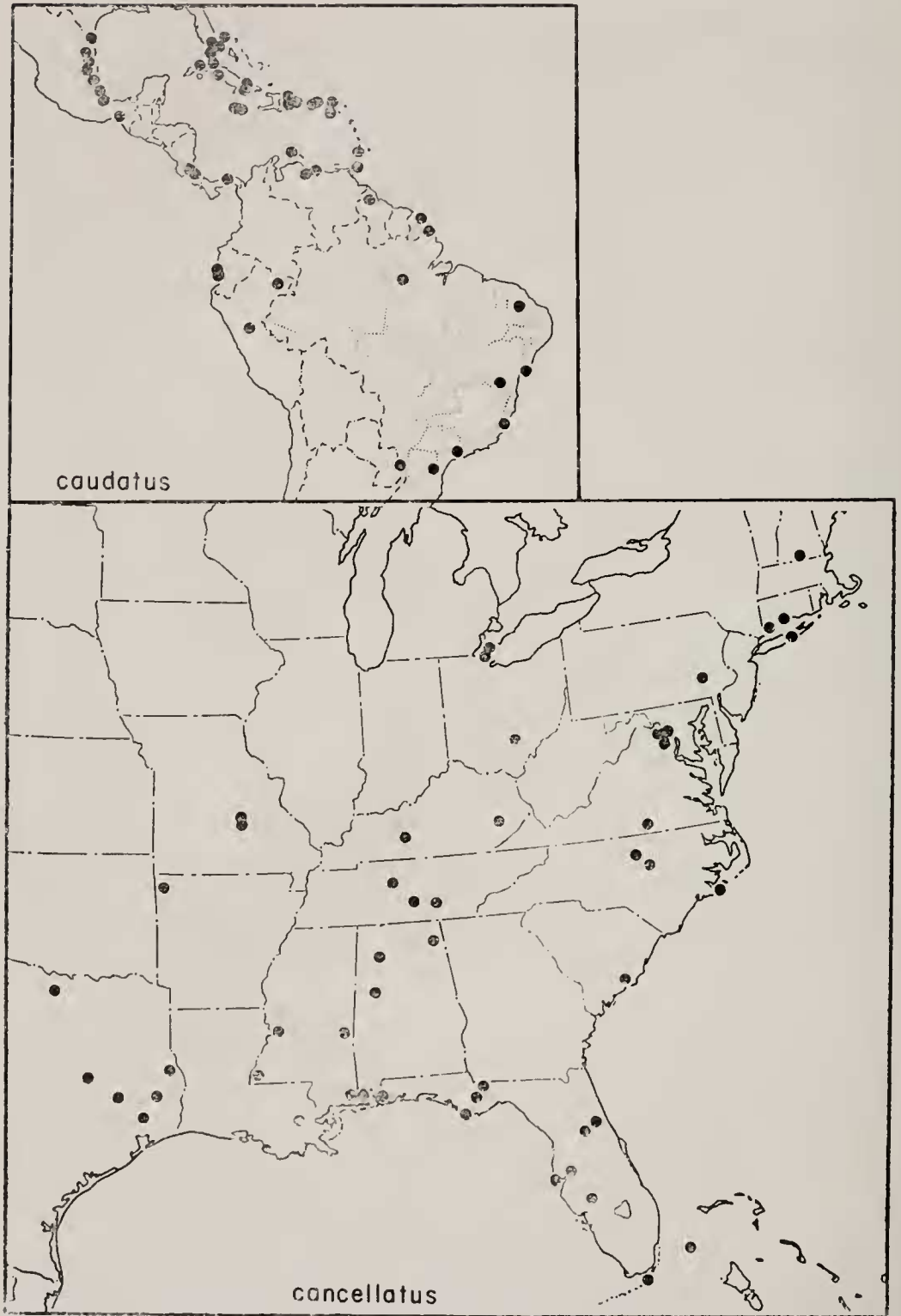
Map 8. Distribution of *Argyrodes americanus* (Taczanowski), *A. cubensis* new species, *A. globosus* Keyserling, and *A. jamaicensis* new species.

Diagnosis. *Argyrodes* differs from *Thwaitesia*, *Spintharus* and *Episinus* by the large size of the colulus, and by having one or two teeth on the posterior margin of the chelicerae. In *Thwaitesia*, *Spintharus* and *Episinus* the colulus is replaced by two setae and all three genera lack teeth on the posterior margin.

The relatively large colulus separates *Argyrodes* from *Thymoites*, which lacks a colulus; *Thymoites* males also have the eye region modified with projections. The modified head region of males, and the variously shaped (never oval) abdomen separates this genus from other Theridiidae with a large colulus: *Steatoda*, *Robertus*, and *Enoplognatha*. *Argyrodes* lacks the patellar spur of *Synotaxus* males.

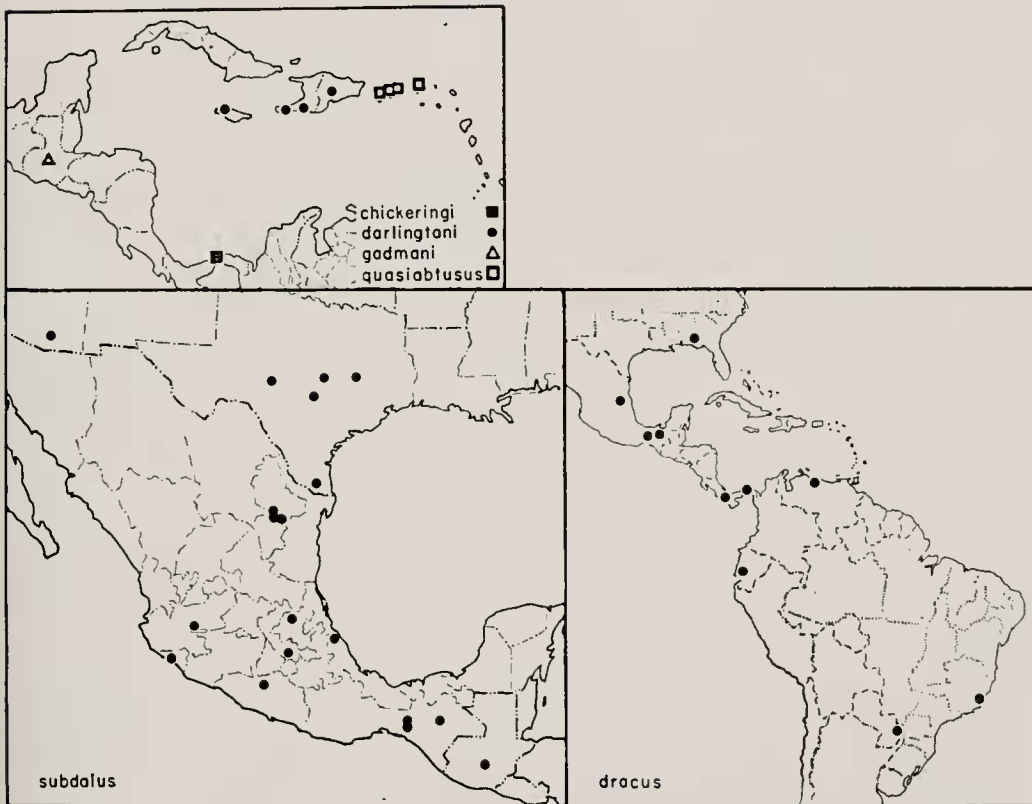


Map 9. Distribution of *Argyrodes bryantae* new species, *A. gapensis* new species, *A. maculosus* O.P.-Cambridge, *A. plaumanni* new species, *A. sicki* new species, *A. spinosus* Keyserling, *A. taeter* new species, *A. ululans* O.P.-Cambridge, and *A. woytkowskii* new species.



Map 10. Distribution of *Argyrodes cancellatus* (Hentz) and *A. caudatus* Taczanowski.

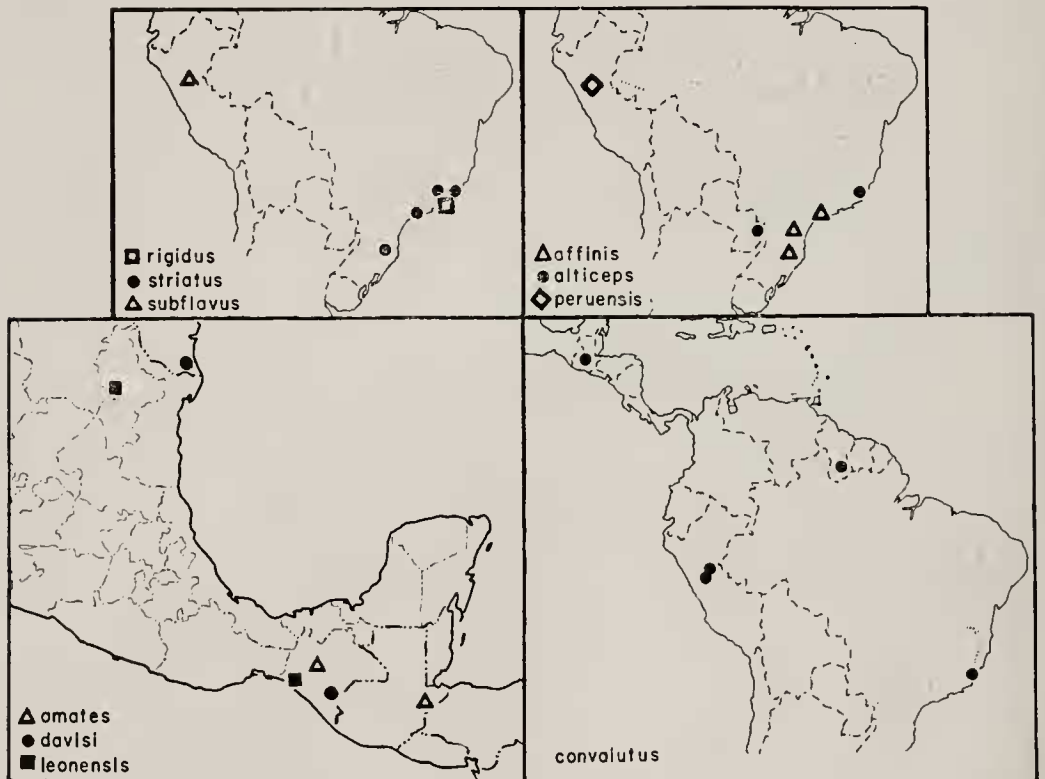
Distribution. *Argyrodes* species are common and widespread in tropical and warm regions of America and other parts of the world, but no species is known to be cosmotropical. Only one, *A. elevatus*, covers nearly the entire range of the genus in the Americas. Three species are found from southern Canada throughout the eastern United States: *A. fictilium*, *A. trigonum*, and *A. cancellatus*. *Argyrodes pluto* ranges from Maryland to western Mexico (Map 5). The western United States, except for the Southwest, is apparently devoid of *Argyrodes* except *A. fictilium*, which extends north along the Pacific coast to British Columbia, and *A. elevatus* and *A. fureatus*, which have been collected occasionally in southern California. *Argyrodes baboqui-*



Map 11. Distribution of *Argyrodes chickeringi* new species, *A. darlingtoni* new species, *A. dracus* Chamberlin and Ivie, *A. godmani* new species, *A. quasiobtusus* new species, and *A. subdulus* O.P.-Cambridge.

vari is the only species endemic to the southwestern United States and northwestern Mexico, although *A. pluto* and *A. subdulus* also occur. Several species are endemic to northeastern Mexico and southern Texas (*A. davisii*, *A. mexicanus*, *A. leonensis*, *A. tacter*,

and *A. concisus*). Several species extend from southeastern United States to southern Brazil or Paraguay (*A. projiciens*, *A. elevatus*, *A. americanus*, *A. caudatus*, and *A. dracus*); several others extend from Central America to southern Brazil (*A. paradoxus*, *A. attenuatus*, *A. amplifrons*). Nineteen species have been collected in Panama. South American species are numerous but their ranges are inadequately known. Collections from most of the West Indies, Central and South America are too inadequate to support distributional generalities.



Map 12. Distribution of *Argyrodes affinis* O.P.-Cambridge, *A. alticeps* Keyserling, *A. amates* new species, *A. convolutus* new species, *A. davisi* new species, *A. leonensis* new species, *A. peruensis* new species, *A. rigidus* new species, *A. striatus* Keyserling, and *A. subflavus* new species.

MISPLACED AND DOUBTFUL SPECIES

Argyrodes elegans Taczanowski, 1872, Horae Soc. Ent. Rossicae, vol. 9, p. 118, pl. 5, fig. 11. Female type from Uassa [Amapa, Brazil], in the Polish Academy of Sciences, Warsaw, examined by Levi. [= *Chrysso elegans* (Taczanowski)].

Argyrodes floridana Banks, 1900, Canadian Ent., vol. 32, p. 98. Female syntypes from Punta Gorda, Florida, in the Museum of Comparative Zoology, examined by Levi. (= *Coleosoma acutiventer* Keyserling).

Argyrodes infelix O.P.-Cambridge, 1880, Proc. Zool. Soc. London, p. 340, pl. 30, fig. 18. Female type from the Amazon, in the Hope Department of Entomology, Oxford University, examined by Levi. [= *Helvibis infelix* (O.P.-Cambridge)].

Argyrodes longicaudatus Keyserling, 1891, Die Spinnen Amerikas, Brasilianische Spinnen, p. 209, pl. 8, fig. 150, ♀, ♂. Syntypes from Est. Rio de Janeiro, Brazil, in the British Museum, Natural History, examined by Levi. [= *Synotaxus longicaudatus* (Keyserling)].

Argyrodes lucmae Chamberlin, 1916, Bull. Mus. Comp. Zool., vol. 60, p. 228, pl. 15, figs. 4-6, ♂. Male type from Lucma, Peru, in the Museum of Comparative Zoology, examined by Levi. (Linyphiidae).

Argyrodes vittatus Keyserling, 1884, Die Spinnen Amerikas, Theridiidae, pt. 1, p. 191, pl. 9, fig. 114. Female types from Bogota, Colombia and Pumamarca, Peru, in the British Museum, Natural History, examined by Levi. [= *Chryssio vittatula* (Roewer)].

Argyrodina monoceros di Caporiacco, 1947, Monitore Zool. Italiano, vol. 56, p. 24. (? *nomen nudum*); 1948, Proc. Zool. Soc. London, vol. 118, p. 649, ♂ (sub *Conopistha*). Male type from British Guiana. [= *Synotaxus monoceros* (di Caporiacco)].

Argyrodina vittatula Roewer, 1942, Katalog der Araneae, vol. 1, p. 439. New name for *A. vittatus* Keyserling. [= *Chryssio vittatula* (Roewer)].

Conopistha acuminata Schenkel, 1953, Verh. Naturf. Gesell. Basel, vol. 64, p. 13. Female type from Prov. Falcon, Venezuela, in the Naturhistorisches Museum, Basel, examined by Levi. [= *Chryssio vittata* (O.P.-Cambridge)].

Conopistha monoceros (di Caporiacco), 1948, Proc. Zool. Soc. London, vol. 118, p. 649, figs. 57-59. [= *Synotaxus monoceros* (di Caporiacco)].

Faiditus bruneoviridis Mello-Leitão, 1948, An. Acad. Brasileira Cienc., vol. 20, p. 156. Female type from British Guiana. [= *Episinus bruneoviridis* (Mello-Leitão)].

Rhomphaea anomala Chamberlin and Ivie, 1936, Bull. Univ. Utah, biol. ser., vol. 3, no. 5, p. 41, fig. 50, ♀. Female type from Panama, in the University of Utah collection. (= *Synotaxus turbinatus* Simon).

The following is a doubtful name. The type is lost. The name may have been applied to a species in the genus.

Theridion intentum Hentz, 1850, Jour. Boston Soc. Nat. Hist., vol. 6, p. 278.

Species whose types were not available and whose description is insufficient for recognition:

Ariamnes feioi Mello-Leitão, 1947, Bol. Mus. Nac., Rio de Janeiro, n.s., zool., no. 80, p. 10, fig. 46. Female type from Rio Claro, Minas Gerais, Brazil, in the Museo Nacional, Rio de Janeiro, belongs to the *Rhomphaea* group.

Conopistha barrosi Mello-Leitão, 1951, Rev. Chil. Hist. Nat., vol. 51-53, p. 330, from Chile. This species is probably *Anelosimus attritus* (Nicolet).

C. friburgensis Mello-Leitao, 1943, An. Acad. Brasileira Cienc., vol. 15, p. 259, from Friburgo, Rio de Janeiro, Brazil. Female type in the Museo Nacional, Rio de Janeiro, is probably *A. elevatus*.

C. pickeli Mello-Leitão, 1943, *ibid.*, p. 259, from Tapera, Pernambuco, Brazil. Female type in the Museo Nacional, Rio de Janeiro, is probably *A. elevatus*.

Rhomphaea altissima Mello-Leitão, 1941, Arq. Inst. São Paulo, vol. 11, p. 249. Female type from Rio Negro, Paraná, Brazil, in the Museo Nacional, Rio de Janeiro, is probably *A. paradoxus*.

R. brasiliensis Mello-Leitão, 1919 (1920), Rev. Soc. Brasileira Scienc., no. 3, p. 174. Female type from Rio de Janeiro, Brazil, in the Museo Nacional, Rio de Janeiro, is probably *A. metaltissimus*.

Relationships. Unlike other large theridiid genera (e.g. *Theridion*, *Dipoena*), *Argyrodes* species are similar in structure and probably are closely related. The widest gap in structural affinity occurs between the *A. cancellatus* group and the others. In the male palpus of the *A. cancellatus* group, a prominent ventral radix hides most of the embolus. The embolus has a basal portion and a spiralling thread-like distal tube. A complicated terminal, partly fleshy conductor supports the tip of the tube (Figs. 406, 407). The male carapace usually lacks projections, but the clypeus has a horizontal seam or groove, and often bulges and may overhang the chelicerae (Figs. 178, 225). The abdomen is not usually extended far behind the spinnerets but is often modified with paired humps and short posterior projections (Figs. 180, 227). All other *Argyrodes* have the palpal radix, often armlike, lying in back between the embolus and the cymbium (Figs. 68, 120, 154), and the embolus is completely exposed in ventral view. The carapace generally bears projections in the eye region or on the clypeus, and the abdomen is usually extended far behind the spinnerets, and is without lateral humps.

The *Rhomphaea* group is characterized by a long projection in the eye region of males (Figs. 9, 12, 15, 24) (absent in *A. fictilium*), and an elongate, pointed abdomen (Figs. 27, 29, 32). The male genital structures of most species (Figs. 6, 11, 14) are similar to those of the *A. trigonum* group. The epigyna are often weakly sclerotized. In many species the palpal femora and tibiae are elongate. *Argyrodes fictilium* is similar to the others in shape of the abdomen and genital structures; however, the clypeus is slanting below (Fig. 7). Considerable variability is found within some species of this group of which representatives are found in other parts of the world. American species are widespread but rare (Maps 1, 2).

The *A. trigonum* group differs from the previous one in having a projection from the clypeus of the male, parallel to that of the eye region (Fig. 78); the abdomen is shorter, usually with two tubercles at the posterior tip (Figs. 69-73, 86, 91). The species

of this group are very similar. The shape of the male carapace and palpal radix are diagnostic. Females are hard to separate. The ducts of the internal genitalia are always short and similar. The width and length of the median raised area of the epigynum differ slightly in different species; however, the shape of the median raised area is somewhat variable in all species. All species have a limited distribution (Map 3), and none are known outside America.

Species of the *Ariamnes* group are characterized by an extremely long, vermiform abdomen (Figs. 99, 100, 127), low carapace, and elongate seminal receptacles in the female (Figs. 121-123) (short in *A. mexicanus*). Palpal structures are more variable. *Argyrodes longissimus* is similar to *A. paradoxus* of the *Rhomphaea* group; *A. mexicanus* to other species of the *Rhomphaea* and *A. trigonum* groups; and *A. attenuatus* is similar to species of the *A. argyrodes* group. The species are readily separated by their genitalia. Species belonging to this group are found in the tropics of all parts of the world. Their ranges do not overlap in America (Map 4).

Species of the *A. argyrodes* group also are very similar. Only four are American; probably there are many in other parts of the world. The anterior median eyes are borne on a cephalic projection that parallels a large clypeal projection (Figs. 128, 133). The palpal cymbium in all species is truncate, as in some species of the *Ariamnes* group. The embolus of the male palpus is a more complicated structure than in the previous groups, but its shape is not diagnostic. The radix differs in shape in different species (Figs. 129, 134, 139, 144). The epigynum is heavily sclerotized and has two large subcircular fossae. The seminal receptacles and tubes are simple, and are also heavily sclerotized. The females of some species are difficult to separate.

The three species placed in the *A. cordillera* group are of doubtful affinity. (The male of *A. fulvus* is unknown). *Argyrodes cordillera* has no clypeal or cephalic projections (Fig. 155); *A. rossi* has a short setae-bearing clypeal tubercle (Fig. 160). The position of the palpal sclerites is as in the *Rhomphaea* group, but they are more heavily sclerotized, and the embolus is corkscrew-shaped. The female epigynum has a posterior rather than an anterior rim (Figs. 159, 164, 167).

The *A. cancellatus* group (characterized above) has many closely related species, with only slight genitalic differences. Four species (*atopus*, *proboscifer*, *cochleaforma*, *sullana*) are set off

from the rest by an unusual projection of the clypeus at its ventral margin (Figs. 178, 183, 188, 194). Several close to *A. gertschi* have the palpal radix split (completely in *A. arthuri*, Fig. 200), and have large seminal receptacles with tubes entering anteriorly (Figs. 202, 209). The numerous species near *A. cancellatus* are, however, very similar with diagnostic differences in the position of the clypeal seam, the shape of the clypeus, and minor differences in palpal parts, especially in the shape of the radix. The portion of the radix near the median ventral edge is usually transparent, showing the embolus underneath. Due to this transparency the edge may be difficult to see. The embolus also may be diagnostic, but is partially hidden by the radix. Because many species are rare, it was not dissected and sufficiently studied in this revision. It is possible that clearing the palpus with clove oil (as was done for *A. globosus* and *A. americanus*) may reveal additional diagnostic characters in the embolus. The conductor may also be diagnostic. The epigyna of many species are very similar but the seminal receptacles and shape and position of the long ducts are often good diagnostic characters, as they differ greatly in otherwise similar species. Related species may also differ in the shape of the abdomen. America is probably far richer in species of this group than other parts of the world.

Key to species groups

- 1a. Abdomen vermiform, with parallel sides, more than 10 times as long behind as anterior to spinnerets, ending in a single tip (Figs. 99, 100); clypeus straight *Ariamnes* group
- 1b. Abdomen short or tapering, not more than six times as long behind as anterior to spinnerets, or if longer, clypeus projecting below, or abdomen with four tips 2
- 2a. Males with a setae-bearing clypeal projection and a parallel cephalic projection or hump bearing setae but not eyes (Figs. 66, 79); epigynum with a longitudinal ridge bearing indistinct openings (Figs. 55, 75, 94); abdomen with two tips (Figs. 69-73) ... *A. trigonum* group
- 2b. Males otherwise, or if with clypeal and cephalic projection, latter bearing eyes (Fig. 128); epigynum otherwise; abdomen with one to several tips 3
- 3a. Males with cephalic projection bearing eyes anteriorly and parallel clypeal projection (Figs. 128, 133); epigynum with two large sub-circular or oval fossae (bordered all around except in *A. pluto* Fig. 142) on a raised, heavily sclerotized plate (Figs. 132, 137, 150), female ducts short (Figs. 131, 141); abdomen subtriangular with a single tip (Figs. 130, 135, 140) *A. argyrodes* group

- 3b. Males otherwise, or if with two projections, cephalic projection bearing eyes on sides (only in *A. plaumanni* Fig. 168); epigynum otherwise, female ducts variable; abdomen variable4
- 4a. Male carapace with a single cephalic projection (Figs. 9, 12, 24)), or if lacking, clypeus slanting and projecting below (Fig. 7); female abdomen tapering to a single tip usually crowned by one or more spines, four to six times as long behind as anterior to spinnerets (Figs. 26, 29, 36, 41)*Rhomphaea* group
- 4b. Male carapace otherwise; female abdomen shorter behind than anterior to spinnerets, or if longer, not evenly tapering, with bulges on sides; usually with four tips, never crowned by spines5
- 5a. Male clypeus without a transverse seam or ventral projection (Figs. 155, 160); palpal radix between embolus and cymbium (Figs. 156, 161); epigynum without scape, fossae without anterior border (Figs. 159, 164, 167)*A. cordillera* group
- 5b. Male clypeus with a transverse seam (Figs. 261, 271, 323) or ventral projection (Fig. 178); palpal radix a large ventro-mesal sclerite hiding embolus (Figs. 129, 332); epigynum with scape, or if not, fossae with anterior border (Figs. 320, 336, 405)*A. cancellatus* group

Key to the *Rhomphaea* group species

- 1a. Male eye region without projection (Fig. 7); epigynum with a central raised area, bordered on three sides (Fig. 28); North and Central America*fictilium*
- 1b. Eye region of male with projection; epigynum otherwise2
- 2a. Thread-shaped portion of embolus longer than length of cymbium (Fig. 23); cephalic projection of male carapace with dorsal tubercle (Fig. 24); epigynum slanting off posteriorly, slant bordered anteriorly by a lip, posteriorly by the genital groove (Figs. 46, 47, 49, 50)
paradoxus
- 2b. Thread-shaped portion of embolus shorter than cymbium length; cephalic projection without dorsal tubercle; epigynum flat without posterior slant3
- 3a. Cephalic projection of male without swelling below distal bulge (Figs. 9, 12); epigynum lightly sclerotized, two openings of epigynum very difficult to see (Figs. 31, 34)4
- 3b. Cephalic projection of male with a swelling below distal end (Figs. 15, 18); epigynum sclerotized with one conspicuous central fossa (Figs. 40, 43)5
- 4a. Cephalic projection of male with distal rounded knob (Figs. 12, 13); epigynum with a faint sclerotized posterior border of variable shape (Fig. 34)*procerus*
- 4b. Cephalic projection longest on ventral side (Figs. 9, 10); epigynum lacking faint posterior border (Fig. 31)*projiciens*

- 5a. Cephalic projection widest at distal end with ventral setae-bearing tubercle (Fig. 15); fossa of epigynum with ducts leaving in a posterior direction (Fig. 43) *honestus*
- 5b. Cephalic projection widest at swelling in middle, and lacking ventral tubercle (Figs. 17-22); fossa of epigynum with ducts leaving in a posterior-lateral direction (Figs. 38, 40) *metaltissimus*

Key to the *A. trigonum* group species

Males

- 1a. Projection in eye region very small or absent (Fig. 79); Peru *obscurus*
- 1b. Projection in eye region always present and distinct 2
- 2a. Clypeus projection very thick, separated from cephalic projection by less than its diameter (Fig. 51); Ecuador to Panama *parvus*
- 2b. Projections separated distally by more than the diameter of clypeal projection 3
- 3a. Both projections short and stubby, in profile wider than long (Fig. 56); Mexico *concisus*
- 3b. Clypeal projection always longer than wide in profile 4
- 4a. Clypeal projection about twice as long as wide (Figs. 84, 89) 5
- 4b. Clypeal projection at least two and one-half times as long as wide (Figs. 61, 66, 95, 97) 6
- 5a. Palpal radix wider than long, with a ventral tooth (Fig. 90); southwestern U.S.A., northwestern Mexico *baboquivari*
- 5b. Radix longer than wide without ventral tooth (Fig. 85); southeastern U.S.A., Mexico, West Indies *furcatus*
- 6a. Distance between eye and clypeal projection about as wide as clypeal projection (Fig. 66); eastern U.S.A. *trigonum*
- 6b. Distance between eye and clypeal projection much wider 7
- 7a. Length of clypeal projection noticeably shorter than height of clypeus below projection (Fig. 61); eastern Brazil *rioensis*
- 7b. Length of clypeal projection almost equal to height of clypeus below projections (Figs. 95, 97) 8
- 8a. Base of projections separated by more than length of clypeal projection (Fig. 95); southeastern Brazil *bicornis*
- 8b. Base of projections separated by less than length of clypeal projection (Fig. 97); Panama, Guiana *triangularis*

Females

- 1a. Median epigynal ridge about as wide as long (Figs. 83, 88, 93, 94) .. 2
- 1b. Median epigynal ridge much longer than wide (Figs. 55, 60, 65, 75) .. 4
- 2a. Peru *obscurus*
- 2b. North America 3

- 3a. Connecting ducts short (Fig. 87), ridge 0.06 mm wide; eastern U.S.A., Mexico, West Indies *furcatus*
 3b. Connecting ducts long (Fig. 92), ridge 0.12 mm wide; southwestern U.S.A., northwestern Mexico *baboquivari*
 4a. Epigynum as in Fig. 75; eastern U.S.A. *trigonum*
 4b. Epigynum otherwise; not U.S.A. 5
 5a. Epigynum as in Fig. 60; Mexico *concisus*
 5b. Epigynum otherwise; Central or South America 6
 6a. Epigynum as in Fig. 55; Ecuador to Panama *parvus*
 6b. Epigynum as in Fig. 65; eastern Brazil *rioensis*

Key to the *Ariamnes* group species

- 1a. Palpus with a large, prominent hook-shaped embolus (Figs. 102-105); epigynum with a flat transverse bridge (Fig. 109); southern Brazil .. *longissimus*
 1b. Palpus, epigynum otherwise 2
 2a. Palpal embolus diamond-shaped (Fig. 113); epigynum with an indistinct transverse ridge (Fig. 115), seminal receptacles suboval (Fig. 114); Mexico *mexicanus*
 2b. Palpal embolus not diamond-shaped; epigynum otherwise, seminal receptacles more than three times as long as wide 3
 3a. Epigynum an indistinct transparent knob (Fig. 111), seminal receptacles folded back (Fig. 110); [male unknown]; Haiti .. *haitensis*
 3b. Epigynum otherwise, seminal receptacles straight 4
 4a. Duct in palpal tegulum in ventral view with one large loop (Fig. 119); epigynum with a knob or transverse projection having an anterior extension at each end (sometimes missing) (Figs. 124, 125); widespread from Costa Rica to Paragnay *attenuatus*
 4b. Duct in palpal tegulum wavy and with an ectal loop in ventral view (Fig. 117); [female unknown]; Peru *schlingeri*

Key to the *A. argyroides* group species

Males

- 1a. A dark line or carina from lower margin of radix tip runs more or less parallel to sides of radix (Fig. 129); end of clypeal projection turned upward (Fig. 128) *elevatus*
 1b. Radix, clypeal process otherwise 2
 2a. Line or carina from lower margin of radix tip runs at an angle to sides (Fig. 134), clypeal projection swollen at end (Fig. 133)..... *nephilae*
 2b. Radix, clypeal process otherwise 3
 3a. Lateral spur of radix large and projecting from a swelling (Fig. 139); U.S.A., Mexico *pluto*
 3b. Lateral spur of radix small and not projecting from a swelling (Fig. 144); Peru *weyrauchi*

Females

- 1a. Fossae of epigynum their diameter or less apart (Figs. 142, 147) 2
 1b. Fossae separated by more than two diameters (Figs. 132, 137) 3
 2a. Fossae bordered all around (Fig. 147); Peru *weyrauchi*
 2b. Fossae bordered on only three sides (Fig. 142); U.S.A., Mexico . . . *pluto*
 3a. Abdomen silvery; carapace length: 0.70-1.00 mm, Florida; 0.80-1.10 mm, West Indies *nephilae*
 3b. Abdomen sometimes silvery; carapace length: 1.05-1.40 mm, southern U.S.A.; 1.20-1.65 mm, West Indies *elevatus*

Key to the *A. cordillera* group species

- 1a. Palpal embolus corkscrew-shaped (Fig. 161); clypeus with a projection bearing a brush of setae (Fig. 160); fossae of epigynum divided by an anteriorly directed scape (Fig. 164); Colombia *rossi*
 1b. Palpal embolus not corkscrew-shaped; clypeus, epigynum otherwise . . . 2
 2a. Distal end of palpal embolus straight (Fig. 156); epigynum with two dark openings more than their diameter apart (Fig. 159); Ecuador . . . *cordillera*
 2b. Epigynum with a semicircular posterior rim (Fig. 167); [male unknown]; southeastern Brazil *fulvus*

Key to the *A. cancellatus* group species

Males

- 1a. Clypeus projecting below, projection with two lobes anterior to chelicerae (Figs. 178, 194) 2
 1b. Clypeus otherwise 5
 2a. Palpal radix U-shaped (Fig. 189); Panama to Ecuador *atopus*
 2b. Palpal radix otherwise; Ecuador, northern Peru 3
 3a. Palpal radix with two prominent teeth (Fig. 179) *cochleaforma*
 3b. Palpal radix otherwise 4
 4a. Palpal radix with a distal ventral projection bearing several small teeth (Fig. 195) *proboscifer*
 4b. Palpal radix with a notch (Fig. 184) *sullana*
 5a. A projection of clypeus surrounding deep groove (Fig. 168); southern Brazil *plaumanni*
 5b. Clypeus otherwise 6
 6a. Tegulum in ventral view showing clearly two concentric duct loops (Figs. 207, 232) 7
 6b. Tegulum in ventral view showing only one loop, or not showing duct, or loops not concentric 11
 7a. Clypeus bulging and hanging below base of chelicerae (Fig. 212) . . . 8
 7b. Clypeus not hanging below base of chelicerae (Fig. 206) 9
 8a. Palpus as illustrated by Figures 218-220; Panama to Bolivia *amplifrons*

- 8b. Palpus as illustrated by Figure 213; Venezuela to Brazil . . . *altus*
- 9a. Palpal radix with an anterior ventral thorn (Fig. 232); West Indies
exiguus
- 9b. Palpal radix otherwise 10
- 10a. Duct diameter of inside loop twice as wide as outside loop (Fig. 207);
Panama *gertschi*
- 10b. Duct diameter of two loops subequal (Fig. 226) *acuminatus*
- 11a. Radix narrow with long spine and teeth on ventral end (Fig. 174);
Peru *woytkowskii*
- 11b. Radix otherwise 12
- 12a. Radix extended across ventral face of palpus almost touching cym-
bium on ectal side (Figs. 381, 386); Peru 13
- 12b. Radix not extended across ventral face of palpus 14
- 13a. Cymbium much narrower at distal end than in middle (Fig. 381) . .
peruensis
- 13b. Sides of cymbium almost parallel (Fig. 386) *subflavus*
- 14a. Tegulum short, sclerotized radix split into two sclerites (Fig. 200);
Panama *arthuri*
- 14b. Tegulum, radix otherwise 15
- 15a. Radix with a long, narrow anterior spine (Fig. 409); clypeus bulging
some distance below anterior median eyes (Fig. 408); southern Brazil
striatus
- 15b. Radix, clypeus otherwise 16
- 16a. Anterior ventral edge of radix with two visible teeth in ventral view
(Figs. 366, 401) 17
- 16b. Radix otherwise 18
- 17a. Spirals of embolus visible in ventral view (Fig. 366); Texas to Ecuador
subdolus
- 17b. Spirals of embolus not visible in ventral view (Fig. 401); southern
Brazil *affinis*
- 18a. Median apophysis in ventral view showing two almost parallel ducts
(Figs. 282, 287) 19
- 18b. Median apophysis otherwise 20
- 19a. Ducts transverse to long axis of palpus (Fig. 282); clypeus bulging
below eyes (Fig. 281); southern Mexico to northern Brazil *ululans*
- 19b. Ducts almost longitudinal (Fig. 287); clypeus not bulging below eyes
(Fig. 286); Central America *bryantae*
- 20a. Eye region projecting beyond clypeus (Fig. 395); southeastern Brazil,
Paraguay *alticeps*
- 20b. Eye region not projecting beyond clypeus 21
- 21a. Clypeus projecting at almost right angle below anterior median eyes
and hanging below base of chelicerae (Fig. 370); Texas, Mexico . .
davisi
- 21b. Clypeus otherwise 22
- 22a. In ventral view duct in tegulum looping from anterior ectal side . . 23
- 22b. In ventral view duct in tegulum not visible or only a longitudinal por-
tion of duct visible 33

- 23a. Height of clypeus below seam more than twice height above seam (Figs. 271, 276) 24
- 23b. Clypeal seam at about middle of carapace height 25
- 24a. Thread portion of embolus visible in ventral view (Fig. 277); northern Mexico *taeter*
- 24b. Thread portion of embolus hidden by radix (Fig. 272); Florida, Mexico *maculosus*
- 25a. Tip of radix hook widened, truncate (Fig. 338); West Indies *darlingtoni*
- 25b. Tip of radix hook otherwise 26
- 26a. Origin of embolic thread in basal portion of embolus visible in ventral view (Fig. 290); Venezuela to Peru *spinosus*
- 26b. Origin of embolic thread not visible in ventral view 27
- 27a. Length of radix hook less than one-fourth radix height 28
- 27b. Length of radix hook at least one-third radix height 29
- 28a. Width of embolic thread less than space between it and radix (Fig. 343); Mexico, Guatemala *godmani*
- 28b. Width of embolic thread greater than space between it and radix (Fig. 354); U.S.A. to Paraguay *dracus*
- 29a. Clypeus bulging below seam (Figs. 324-331) 30
- 29b. Clypeus straight below seam (Fig. 302) 31
- 30a. Clypeus bulge hanging in front of base of chelicerae (Figs. 324-331); eastern U.S.A. *cancellatus*
- 30b. Clypeus bulge not hanging in front of chelicerae (Fig. 375); Mexico, Guatemala *amates*
- 31a. In profile, chelicerae longer than carapace height (Figs. 301, 302); southern U.S.A. to Paraguay *caudatus*
- 31b. In profile, chelicerae shorter than carapace height 32
- 32a. Length of portion of embolus visible in ventral view less than half the height of radix (Fig. 348); West Indies *quasiobtusus*
- 32b. Length of portion of embolus visible in ventral view equals height of radix (Fig. 361); Panama *chickeringi*
- 33a. Thread portion of palpus hidden by radix (Fig. 237) 34
- 33b. Part of thread portion of palpus visible in ventral view 35
- 34a. Thread-shaped portion of embolus behind anterior edge of radix (in palpus cleared with oil, Figs. 236, 238, 240); southeastern U.S.A. to southern Brazil *americanus*
- 34b. Thread-shaped portion of embolus behind middle of radix (in palpus cleared with oil, Figs. 248, 250, 252); southeastern U.S.A. to Ecuador *globosus*
- 35a. Two spirals of thread-shaped portion of embolus visible in ventral view through transparent radix (Fig. 391); Mexico *leonensis*
- 35b. Only portion of one spiral visible in ventral view 36
- 36a. Clypeal seam close to ventral margin of clypeus (Fig. 295); southeastern Brazil *sicki*
- 36b. Clypeal seam at about middle of carapace height 37
- 37a. Abdomen shorter behind spinnerets than in front; Jamaica *jamaicensis*

- 37b. Abdomen one and one-half times longer behind spinnerets than in front *cubensis*

Females

- 1a. Epigynum a transverse groove with a posterior lightly sclerotized border (Fig. 177); Peru *woytkowskii*
- 1b. Epigynum without posterior transverse border 2
- 2a. Epigynum with a central longitudinal fossa in a projection (Figs. 229, 230) *acuminatus*
- 2b. Epigynum otherwise 3
- 3a. Epigynum with a slender median scape posterior to a transverse anterior margin (Fig. 399); southeastern Brazil to Paraguay .. *alticeps*
- 3b. Epigynum otherwise 4
- 4a. Epigynum with scape margins forming anterior and lateral rims of fossae (Figs. 182, 336) 12
- 4b. Epigynum without a scape or with a projecting scape; fossae indistinct or with posterior rim (Figs. 187, 412) 5
- 5a. Epigynum with a median projecting scape or knobs (Fig. 187) 6
- 5b. Epigynum without scape or knob 10
- 6a. Diameter of lateral fossae larger than that of scape (Fig. 187); Ecuador, northern Peru *sullana*
- 6b. Fossae not distinct or diameter smaller than that of scape 7
- 7a. Abdomen more than three times as long behind as anterior to spinnerets 8
- 7b. Abdomen less than twice as long behind as anterior to spinnerets . 9
- 8a. Epigynum with a heavily sclerotized depression posterior to scape (Figs. 203-205); Panama *arthuri*
- 8b. Epigynum with a lightly sclerotized indistinct depression posterior to scape (Figs. 210, 211); Panama *gertschi*
- 9a. Epigynum with an acute projecting scape flanked by openings (Fig. 193); Panama to Ecuador *atopus*
- 9b. Epigynum with a sclerotized knob bearing indistinct openings (Fig. 198); Ecuador, northern Peru *proboscifer*
- 10a. Epigynum with two pockets anterior to sclerotized rim (Fig. 216); Venezuela to Brazil *altus*
- 10b. Epigynum otherwise; southeastern and southern Brazil 11
- 11a. Loops visible through epigynal depression (Fig. 405) *affinis*
- 11b. Loops not visible through epigynal depression (Fig. 412) *rigidus*
- 12a. Posterior border of scape wider than diameter of lateral fossae (Figs. 265, 341) 13
- 12b. Posterior border of scape narrower than diameter of fossae 15
- 13a. Posterior border of scape rounded (Fig. 341); West Indies *darlingtoni*
- 13b. Posterior border of scape truncate 14
- 14a. Ducts short (Fig. 264); Jamaica *jamaicensis*
- 14b. Ducts longer, with loops (Fig. 284); southern Mexico to northern Brazil *ululans*

- 15a. Scape narrow, almost as long as total width between outsides of fossae (Fig. 369); Texas to Guatemala *subdolos*
- 15b. Scape otherwise 16
- 16a. Lateral margins of fossae very wide, almost reaching genital groove (Fig. 224); Panama to Paraguay *amplifrons*
- 16b. Lateral margins otherwise 17
- 17a. Scape blunt, fossae on each side with a semicircular dark mark (Fig. 280); Mexico *taeter*
- 17b. Scape otherwise, fossae without mark 18
- 18a. Duct of internal genitalia simple, shorter than twice the diameter of seminal receptacles (Figs. 245, 259) 19
- 18b. Duct of internal genitalia coiled or with sclerotized chambers; longer than twice the diameter of seminal receptacles 21
- 19a. Fossae almost circular; their diameter equal to width of base of scape (Fig. 247); southeastern U.S.A. to Brazil *americanus*
- 19b. Fossae wider than long; wider than base of scape (Fig. 260) 20
- 20a. Abdomen higher than long without posterior dorsal tubercle (Figs. 256, 257); southeastern U.S.A. to Ecuador *globosus*
- 20b. Abdomen longer than high, with posterior dorsal tubercle (Fig. 268); Cuba *cubensis*
- 21a. Scape more than three times length of fossae (Figs. 172, 257, 389) 22
- 21b. Scape shorter than twice length of fossae 27
- 22a. Ducts forming spiral coils (Fig. 388); Guatemala to southern Brazil
convolutus
- 22b. Duct otherwise 23
- 23a. Duct loosely coiled (Fig. 171); Guianas *caudatus*
- 23b. Duct otherwise 24
- 24a. Area posterior to scape swollen (Figs. 357, 358); Mexico to Paraguay
draeus
- 24b. Area posterior to scape not swollen 25
- 25a. Scape long, pointed (Fig. 351); duct lumen in sclerotized chambers (Fig. 350); West Indies *quasiobtusus*
- 25b. Scape blunt; duct lumen not in sclerotized chambers 26
- 26a. Duct with several heavily sclerotized coils (Fig. 363); Panama
chickeringi
- 26b. Duct with only the most anterior coil sclerotized (Fig. 378); Mexico, Guatemala *amates*
- 27a. Ducts wide, short, S-shaped (Fig. 234); West Indies *exiguus*
- 27b. Ducts otherwise 28
- 28a. A pair of spherical sclerotized chambers between openings and seminal receptacles (Fig. 298); southeastern Brazil *sieki*
- 28b. No spherical chambers present 29
- 29a. Ducts in double coil through heavily sclerotized chambers posterior to seminal receptacles (Fig. 383); Peru *peruensis*
- 29b. Ducts otherwise 30
- 30a. Ducts of about equal width (Figs. 171, 373) 31
- 30b. Ducts much narrower near seminal receptacles than at openings (Figs. 181, 274) 33

- 31a. Ducts loosely coiled (Fig. 171); Guianas *ecandatus*
 31b. Ducts in tight coils (Figs. 373, 393) 32
 32a. Ducts double coiled (Fig. 373); Texas, Mexico *davisi*
 32b. Ducts with simple coil surrounding straight portion of duct (Fig. 393); Mexico *leonensis*
 33a. Length of ducts only slightly more than two diameters of seminal receptacles (Fig. 181); Ecuador, northern Peru *coehleiforma*
 33b. Length of duct more than three diameters of seminal receptacles .. 34
 34a. Ducts leaving seminal receptacles in a posterior direction (Fig. 274); Florida, Mexico *maculosus*
 34b. Ducts leaving seminal receptacles in a lateral or anterior direction (Figs. 293, 345) 35
 35a. Duct with a loop on each side of seminal receptacle, then continuing S-shaped to opening (Fig. 293); Jamaica *gapensis*
 35b. Duct otherwise 36
 36a. Duct with only one loop as in Figure 345; Guatemala *godmani*
 36b. Ducts with several loops 37
 37a. Area posterior to scape swollen (Fig. 336); ducts fused and sclerotized (Figs. 333-334); eastern U.S.A. *cancellatus*
 37b. Area posterior to scape not swollen (Fig. 320); ducts not fused (Figs. 311-318); southern U.S.A. to Paraguay *caudatus*

The *Rhomphaea* group

ARGYRODES FICTILIUM (Hentz)

Figures 6, 7, 26-28; Map 1

- Theridion* ? *fictilium* Hentz, 1850, Jour. Boston Soc. Nat. Hist., vol. 6, p. 282, pl. 10, fig. 4; 1875, Occ. Papers Boston Soc. Nat. Hist., vol. 2, p. 155, pl. 17, fig. 4 [query Hentz's]. Female type from Alabama, lost.
Argyrodes fictilium, Emerton, 1882, Trans. Connecticut Acad. Arts and Sci., vol. 6, p. 24, figs. 2, 2a.
Rhomphaea remota Bryant, 1940, Bull. Mus. Comp. Zool., vol. 86, p. 308, fig. 74. Male holotype from Trinidad Mts., Cuba, in the Museum of Comparative Zoology, examined by Levi. NEW SYNONYMY.
Rhomphaea fictilium, Kaston, 1948, Bull. Connecticut Geol. Nat. Hist. Surv., no. 70, p. 89, figs. 85, 86. Bonnet, 1958, Bibliographia Araneorum, vol. 2, pt. 4, p. 3864.
Rhomphaea lacerta, Chamberlin and Ivie, 1944, Bull. Univ. Utah, biol. ser., vol. 8, no. 5, p. 45, fig. 54. Archer, 1946, Paper Alabama Mus. Nat. Hist., no. 22, p. 25. Probably not *Tetragnatha lacerta* Walckenaer, 1841.

Note. The specific name is used as a noun in apposition.

Description. Male from Missouri. Carapace, legs, sternum, and palpi pale yellow, with parallel brown stripes from anterior median eyes to anterior margin of clypeus, and some brown on thorax. Abdomen tan with silvery spots, and some brownish

streaks on sides. Eyes on single tubercle, those of each side almost touching, and widely separated from those of other side, with anterior medians and posterior medians about equal in size, larger than lateral eyes. Clypeus slanting, long (Fig. 7). Legs and palpi very long, slender. Abdomen very long, worm-like; covered, at least in posterior part, with long, fine hairs; tip usually pointed but without cuticular spine. Total length 5.0 mm. Carapace 1.8 mm long. First femur, 6.4 mm; patella and tibia, 5.4 mm; metatarsus, 3.4 mm; tarsus, 1.7 mm.

Female from Missouri. Color similar to that of male; a reddish brown stripe on palpi; patella and distal part of metatarsus of first leg brown. Abdomen darker than in male, pale brown dorsally and on sides covered with silvery flecks. Clypeus and eyes as in male. Chelicerae with one tooth on anterior, one on posterior margin. Abdomen much heavier than that of male and tapering evenly to tip (Fig. 26). Total length 10.5 mm, with posterior part of abdomen sinuous and tip curled upward. Carapace 1.5 mm long. First femur, 7.3 mm; patella and tibia, 5.7 mm; metatarsus, 3.2 mm; tarsus, 1.6 mm.

Variation. The abdomen varies in shape as is illustrated by Figure 26. The total length varies in part with the length of the abdomen, which is often coiled either upward or downward at the posterior tip. Males measure from 3.0 to 6.6 mm, with the carapace varying from 1.0 to 1.4 mm long. Females measure from 5.6 to 12.0 mm, with carapace from 1.3 to 1.7 mm long. The color is usually pale, but a few specimens have reddish brown median stripes on the venter of the abdomen and sternum, light brown bands on carapace and the abdomen is conspicuously brownish on sides. Parts of the male palpi are more definitely sclerotized in some specimens than in others, and the embolus and conductor, which are nearly parallel in some specimens, are at a slight angle in others. The palpal tibiae are shorter in California specimens than in eastern ones. The seminal receptacles in some female genitalia appear quite far apart; those examined from the dorsal side show the receptacles separated by less than a radius. The epigynum of a female from Oregon appears slightly aberrant. The epigyna are often covered after mating by an easily removable exudation.

Diagnosis. The abdomen of *A. fictilium* is unusually long, sinuous, and evenly tapered, and lacks a spine at the tip (Fig. 26). Both embolus and conductor of the male palpus are obliquely placed in the apical half of the bulb (Fig. 6). The palpus is very long and slender, and the tarsus only slightly wider than the

distal part of the tibia. The male lacks a cephalic projection (Fig. 7) which separates it from other males described from America. The epigynum of the female has a central depression on a raised area, bordered by a sclerotized edge. The edge hides the well-separated openings of the tubes (Fig. 28). The seminal receptacles are oval and variably separated, usually by less than a radius (Fig. 28). The membranous tubes lie ventral to posterior edge of receptacles, and are invisible in dorsal view (Fig. 27).

Ecology. These spiders often make small theridiid webs of their own, but females are sometimes collected in webs of other spiders.

Distribution. From southern Canada to Panama. Widely scattered, but rare; Map 1.

Records. Canada. Ontario. Nipissing Co.: Lake Timagami, ♀ (W. J. Gertsch, W. Ivie, T. Kurata). *British Columbia.* Pender Harbour (W. Watkins); Wellington (R. Guppy); Nanaimo (R. B. Conway).

United States. Maine. Cumberland Co.: Long Island (J. H. Emerton). Hancock Co.: Mt. Desert Isl. (W. Procter). Waldo Co.: Winterport. *Massachusetts.* Barnstable Co.: Woods Hole (H. Britcher). Essex Co.: Bartholomew's Pond, Peabody (J. H. Emerton); Essex (J. H. Emerton). Middlesex Co.: Lexington (J. H. Emerton); Holliston (N. Banks). *Connecticut.* Norwalk, juv. (W. J. Gertsch). *New York.* Nassau Co.: Sea Cliff (N. Banks). Sullivan Co.: White Lake, juv. (H. Britcher). *Tennessee.* Robertson Co.: 30 mi. N of Nashville (W. J. Gertsch). *North Carolina.* Carteret Co.: Beaufort (R. D. Barnes). Durham Co.: Duke Forest (A. M. Chickering). Orange Co.: Chapel Hill (J. H. Emerton). Pasquotank Co.: Elizabeth City (J. H. Emerton). *Georgia.* Cobb Co.: Marietta (J. H. Emerton). Ware Co.: Waycross (W. J. Gertsch). (Chamberlin and Ivie, 1944). *Florida.* Alachua Co.: W of Gainesville (W. J. Gertsch). Hillsborough Co.: Hillsborough River State Park (W. J. Gertsch). Lake Co.: Leesburg (M. Statham). Liberty Co. (H. K. Wallace). Okeechobee Co.: Okeechobee (W. J. Gertsch). *Alabama.* (Archer, 1946). *Mississippi.* Amite Co.: Gloster (A. F. Archer). Forrest Co.: Hattiesburg (A. F. Archer). *Missouri.* Madison Co.: 14 mi. E of Farmington (H. E., D. L. Frizzell). Phelps Co.: near Rolla (H. E., D. L. Frizzell). *Texas.* Denton Co.: Dallas (S. Jones). Travis Co.: Austin (H. E., D. L. Frizzell). *Washington.* King Co.: Seattle (M. H. Hatch). San Juan Co.: Friday Harbor (M. H. Hatch). *Oregon.* Coos Co.: Camp Myrtlewood, 1½ mi.

S of Bridge (V. Roth). Yamhill Co.: McMinnville (K. M. Fender). *California*. Marin Co.: Mill Valley (W. J. Gertsch, V. Roth). Monterey Co.: Pacific Grove, juv. (J. C. Bradley); Big Sur, juv. (W. J. Gertsch). Santa Clara Co.: Palo Alto (A. M. Nadler); near Stanford Univ. (L. W. Swan). Santa Cruz Co.: Big Basin, juv. (R. X. Schick).

Mexico. *Nuevo León*: El Papalote, km 1120 (A. F. Areher). *Panama Canal Zone*. Summit; Barro Colorado Isl.; Experimental Gardens; Forest Reserve (all A. M. Chickering). *Cuba*. (Bryant, 1940). *Jamaica*. St. Andrew's Par.: Mona, ♂ (A. M. Chickering). Trelawny Par.: Falmouth (C., P. Vaurie). *Puerto Rico*. Luquillo Mts., ♀ (H. Beatty). *Paraguay*. Territ. Fondere, June 3, 1908, ♀ (E. Reimoser coll.) [erroneous locality?].

ARGYRODES PROJICIENS (O.P.-Cambridge), new combination

Figures 8-10, 29-31; Map 2

Rhomphaea projiciens O.P.-Cambridge, 1896, *Biologia Centrali-Americana*, Araneidea, vol. 1, p. 186, pl. 23, figs. 9, 10. Male, female syntypes from Teapa, Tabasco, Mexico, in the British Museum (Natural History), examined by Levi. F.P.-Cambridge, 1902, *op. cit.*, vol. 2, p. 407, pl. 38, figs. 17, 18.

Rhomphaea spinosa Badcock, 1932, *Jour. Linnean Soc. London*, vol. 38, p. 8. Immature female from Paraguay, in the British Museum (Natural History), examined by Levi. NEW SYNONYMY.

Rhomphaea martinae Exline, 1950, *Studies Honoring Trevor Kincaid*, Univ. of Washington Press, p. 116, figs. 5, 7, 8, 14, 16. Male holotype from Chira River Valley, Piura, Peru, in the Museum of Comparative Zoology. NEW SYNONYMY.

Note. Specimens from Cuba, identified as *R. projiciens* by Franganillo, have the tip of the abdomen divided; they are probably *Argyrodes furcatus*. Only female specimens have been found in the United States, Mexico, Brazil and Paraguay.

Description. Male from Panama Canal Zone. Carapace pale yellow, thoracic part with irregular gray band on each side and on clypeus from anterior median eye to edge, sometimes continuing on face of chelicerae. Legs and palpi pale, irregularly annulated with light brown, and streaked with reddish longitudinal lines and spots. Sternum pale with irregular brownish lateral bands uniting behind and almost uniting anteriorly. Abdomen pale with brownish streaks on venter and around spinnerets, large dark gray patches on posterior part of abdomen, which is thickly covered with irregular silvery spots. Carapace low with eyes and cephalic projection on low tubercle. Eyes small, anterior

median eyes a little larger than others, contiguous with anterior lateral eyes. Posterior median eyes separated by about a diameter and close to posterior lateral eyes. Cephalic projection arising from between anterior median eyes, slender proximally, gradually thickened distally with a ventral tip bearing a brush of curved setae (Figs. 9, 10). Clypeus straight, slanting a little forward, a little higher than length of chelicerae. Legs long, thin, thickly covered with hair-like setae. Abdomen slender, projecting dorsally from spinnerets. Posterior tip wrinkled, bluntly rounded with a long sclerotized spine. Total length 3.2 mm. Carapace 1.5 mm long with cephalic projection, 1.2 mm without. Abdomen 2.9 mm long. First femur, 4.7 mm; patella and tibia, 4.5 mm; metatarsus, 2.5 mm; tarsus, 1.3 mm.

Female from same locality. Color as in male but brighter, brownish bands uneven and forming a reticulated pattern. Carapace somewhat raised behind thoracic groove, and eye tubercle more prominent than in male. Chelicerae with one quite prominent tooth on upper margin of furrow, two to three smaller ones on lower. Clypeus a little more slanting than in male. Posterior median eyes a little farther apart. Abdomen extending far above spinnerets; tip as in male with the long spine (Fig. 29). Total length 4.0 mm. Carapace 1.5 mm long. Abdomen 6.6 mm long. First femur, 5.6 mm; patella and tibia, 4.7 mm; metatarsus, 2.8 mm; tarsus, 1.4 mm.

Figures 30, 31 were prepared from the type of *Rhomphaca projiciens*.

Variation. Males are from 3.0 to 5.0 mm long, depending mostly on direction of the posterior portion of the abdomen, which is sometimes at right angles to carapace, sometimes almost straight. Some males are pale yellow with faint markings and silvery abdomens. Others have conspicuous markings of red and brown on carapace and legs, and abdomen with blackish patches with only a few silvery spots. Color, length and direction of the abdomen even more variable in females (from Panama, Brazil and Paraguay). Dark specimens may have a light brown carapace with blackish bands, legs and palpi orange with black and red markings, and abdomen mostly reddish brown with black patches and only a thin silvery reticulation. Length varies from 3.0 to 6.5 mm. The caudal spine is usually present, but may be short, bent over, broken, or sometimes missing.

Diagnosis. The shape of the cephalic projection (Figs. 9, 10) separates males from *A. procerus* and *A. metaltissimus* with which they have been confused. The long and slender palpus has

radix, conductor and embolus all drawn out, slender (Fig. 8), and directed almost parallel to the long axis of the tarsus. This species is lightly colored; dark females in Panama are usually either *A. projiciens* or *A. paradoxus*. *Argyrodes projiciens* can be separated by the epigynum (Fig. 31) which is slightly swollen, not reaching the genital groove. Posterior to a shallow longitudinal median groove lie two small, indistinct, somewhat distant openings. There is no sclerotized edge behind openings as in *A. procerus*. The shallow groove may be difficult to see because of scattered pigment. The openings are somewhat variable in appearance due to the amount of sclerotization at the ends of the tubes. The connecting tubes are simple and weakly sclerotized (Fig. 30).

Distribution. Florida, Texas to Paraguay. None have been identified from the West Indies; Map 2.

Records. United States. Florida. Dade Co.: Royal Palm Park, Everglades Natl. Park, ♀ (W. S. Blatchley). *Texas.* Hidalgo Co.: San Juan. Travis Co.: Austin (A. Flury); near Austin (D. L., H. E. Frizzell).

Mexico. Oaxaca: Playa Hati (H. Wagner). *Chiapas:* Finca Cuauhtemoc, near Cacahoatán (C., M. Goodnight); Puerto Madero (C., M. Goodnight). *Guatemala.* San Jerónimo (C., P. Vaurie). *Panama.* Arraiján; Boquete; El Valle (all A. M. Chickering). *Panama Canal Zone.* Barro Colorado Isl.; Experimental Gardens; Chilibre; Madden Dam; Summit (all A. M. Chickering); Barro Colorado Isl. (A. M. Nadler).

Ecuador. Guayas: Milagro. *Peru. Piura:* Pariñas Valley; Chira River Valley. *Brazil. Bahia:* Condeúba (E. Gounelle, MNHN). *Minas Gerais:* Caraça (E. Gounelle, MNHN). *Rio de Janeiro:* Rio de Janeiro (Germain, MNHN). *Santa Catarina:* Nova Teutonia, lat 27°11', long 52°23' (F. Plaumann, SMF). *Paraguay.* (MNHN). *Alto Parana:* Apa; Taguararapa.

ARGYRODES PROCERUS (O.P.-Cambridge), new combination

Figures 11-13, 32-34; Map 2

Rhomphaea sp. Simon, 1894, Histoire Naturelle des Araignées, vol. 1, fig. 507. Female from Venezuela.

Ariamnes procerus O.P.-Cambridge, 1898, Biologia Centrali-Americana, Araneidea, vol. 1, p. 257, pl. 38, fig. 5. Female type from Bugaba, Panama, in the British Museum (Natural History), examined by Levi.

Rhomphaea procerus, F.P.-Cambridge 1902, Biologia Centrali-Americana, Araneidea, vol. 2, p. 407, pl. 38, fig. 19.

Rhomphaea simoni Petrunkevitch, 1911, Bull. Connecticut Acad. Sci., vol. 29, p. 186. Name for *Rhomphaea* sp. Simon, 1894, *op. cit.*, fig. 507. NEW SYNONYMY.

Note. A female specimen in the Muséum National d'Histoire Naturelle, Paris, from San Estebán, Venezuela, collected by Simon, has the long abdomen rounded at the tip, as in Simon's (1894) illustration, named by Petrunkevitch.

Description. Male from Panama Canal Zone. Carapace pale yellow with a few irregular grayish markings on thorax, and a pair of pale gray, longitudinal bands on clypeus. Legs nearly white with a few pale gray spots. Sternum with a pair of longitudinal gray bands united posteriorly. Integument of abdomen yellowish, almost entirely covered with silver; a few gray spots near tip and a grayish band from spinnerets to tip. Carapace low with raised eye tubercle. Median eyes widely separated. Anterior median eyes largest, lateral eyes smallest and somewhat irregular in shape. Cephalic projection arises from median ocular area, and is expanded distally into a fleshy knob, without conspicuous long setae (Figs. 12, 13). Clypeus as high as chelicerae are long, projecting below. Abdomen very slender and tapering evenly behind spinnerets. Tip pointed but without spine. Total length 3.9 mm. Carapace 1.1 mm long. First femur, 5.4 mm; patella and tibia, 5.0 mm; metatarsus, 2.5 mm; tarsus, 1.2 mm.

Female from Panama Canal Zone. Carapace color as in male, with palpal segments gray ventrally. Sternum yellow with gray in middle spreading to sides in a reticulated pattern. Legs very pale with a few dark spots. Abdomen pale yellow covered with silver as in male but with more gray markings on sides and underneath, and a few dark, widely scattered spots. Carapace raised behind thoracic groove and at eye tubercle. Eyes as in male. Clypeus more rounded and slanting than in male. Abdomen similarly tapered and elongate behind spinnerets, but larger and thicker than in male, with a small membranous spine at tip (Fig. 32). Total length 6.4 mm. Carapace 1.5 mm long. First femur, 7.3 mm; patella and tibia, 6.4 mm; metatarsus, 2.6 mm; tarsus, 1.4 mm. Females vary from 5.5 to 10.2 mm long, depending mostly on length of abdominal projection.

Figures 33, 34 were prepared from the type of *Ariamnes procerus*.

Diagnosis. *Argyrodes procerus* is paler and more fragile than other species in Panama, and is without spine on abdomen. The male differs from *A. projiciens* by smaller size, carapace shape

and a differently shaped projection (Figs. 12, 13). The palpus is similar to that of *A. projiciens* but has a wider tegulum, a shorter embolus and a longer, thinner, nearly rectangular radix (Fig. 11). The unique epigynum is very lightly sclerotized, flat with a pair of small, contiguous openings near the posterior edge, sometimes separated. The openings are anterior to diagnostic, though faint, sclerotized margin (Fig. 34). The margin may be straight, wavy or curved. The seminal receptacles are comparatively small, broadly oval, separated but not far apart. The tubes are simple and narrow, extending from the openings laterally to enter the receptacles on the posterior margin (Fig. 33). (Males and females have not been taken together, and have been matched on the basis of color and position of the eyes.)

Distribution. Costa Rica to Venezuela; Map 2.

Records. *Costa Rica.* Cartago, Nov. 1953, ♀ (N. L. H. Krauss); Orosi, Oct. 1953, ♀ (N. L. H. Krauss). *Panama.* Arriaján. *Panama Canal Zone.* Experimental Gardens; Forest Reserve; Fort Sherman; France Field; Madden Dam; Balboa; Barro Colorado Isl. (all A. M. Chickering). *Venezuela.* *Carabobo:* San Estebán, 1888, ♀ ♂ (E. Simon, MNHN).

ARGYRODES HONESTUS new species

Figures 14, 15, 41-43; Map 2

Type. Male from Nova Teutonia, lat 27°11' W, long 52°23' S, Santa Catarina, Brazil (F. Plaumann), in the Senckenberg Museum, Frankfurt. The specific name is a Latin adjective meaning well-favored.

Description. Male type. Carapace very pale with only a trace of dark longitudinal bands. Cephalic projection light brown. Bands present on clypeus. Legs pale yellow with light brown annulations. Sternum pale with a pair of irregular brown stripes. Abdomen yellow with brown stripes and streaks on venter, sides, and a few on dorsum. Silver patches on dorsum. Posterior part thickly covered with silver over a tan background. Carapace flat. Anterior median eyes slightly larger than posterior median eyes. Posterior eyes separated by a diameter. Cephalic projection arises from area between median eyes, more slender than that of *A. metallissimus*, slightly constricted near base; distal part with a ventral tip bearing a tuft of forward pointing setae (Fig. 15). Clypeus high, straight, with considerable space between edge of clypeus and base of chelicerae. Abdomen very slender, greatly prolonged behind and above spinnerets,

terminating in a membranous point. Non-lanceolate setae on posterior part short and lying against abdomen. Total length 4.0 mm. Carapace 1.3 mm long, with cephalic projection; 1.1 mm long without. First femur, 4.5 mm (other segments missing).

Female paratype. Color as in male; abdomen almost entirely silver with a few dark markings toward tip. Carapace as in male with eye region raised and tuberculate. Clypeus straight, slanting a little forward, not as high as chelicerae are long. Abdomen very high, seemingly with a circlet of long, prone, roughened setae. Posterior tip missing. Total length 4.5 mm. Carapace 1.5 mm long. First femur, 6.2 mm (other segments missing).

Variation. A male from Venezuela is nearly identical to type specimen but the ventral tip on the cephalic projection is larger.

Diagnosis. *Argyrodes honestus* is less well-marked than related species and the tip of the abdomen is more pointed (Fig. 41). Male cephalic projection (Fig. 15) is more slender than that of *A. metaltissimus*. Palpi have the tarsi narrower and longer. Palpal sclerites are similar to those of *A. metaltissimus*, except that radix is short and has sides nearly parallel without distal hook (Fig. 14). Epigynum flatter than in *A. metaltissimus*. Posterior depression inconspicuous. Fossa wider than long (Fig. 43), showing paired tube openings on posterior margin when abdomen is tilted. Tubes narrow, sclerotized, passing posterior rather than lateral, then folding dorsally to form a straight transverse line and bending ventrally to seminal receptacles. Seminal receptacles small, broadly oval, less than a diameter apart (Fig. 42).

Distribution. Venezuela to southern Brazil; Map 2.

Records. *Venezuela.* ♂ (SMF). *Brazil. Santa Catarina:* Nova Teutonia, ♀ paratype (F. Plaumann, SMF).

ARGYRODES METALTISSIMUS (Soares and Camargo),
new combination

Figures 16-22, 35-40; Map 2

Rhomphaca metaltissima Soares and Camargo, 1948, Bol. Mus. Paraense, vol. 10, p. 365, figs. 15-18. Male holotype from Chavantina, Mato Grosso, Brazil, in the Departamento de Zoologia da Secretaria da Agricultura, São Paulo, examined by Levi.

Description. Male from Panama Canal Zone. Carapace yellow with a dark gray longitudinal band near each lateral margin, and a pair of bands on clypeus. Legs pale yellow, inconspicuously annulate with light brown. Sternum pale with a pair of longitudinal bands uniting posteriorly. Abdomen very pale with a

dark gray ventral band, large black streaks and irregular spots, especially toward posterior tip and between spinnerets and tip. Silvery patches scattered over dorsum and posterior part. Carapace unusually flat. Anterior median eyes much larger than others and overhanging elypeus. Eyes of each side nearly contiguous. Posterior median eyes separated by a little more than their diameter. Lateral eyes smaller than others. Cephalic projection arising between anterior median eyes, large and fleshy, slightly irregular in outline, with entire tip setae-bearing but setae not forming a brush or tuft (Figs. 17-22). Clypeus slightly concave, not quite as high as chelicerae are long. Legs very long and densely clothed with fine setae. Abdomen slender from base to spinnerets, somewhat bulging at level of spinnerets and tapering to blunt tip. Tip with integument wrinkled, bearing scattered, long, black, flattened lanceolate setae (often missing from alcoholic specimens, though scars remain). Posterior part of living abdomen probably movable in a worm-like fashion; some preserved specimens have abdomen sinuous or curled upward or downward. Total length 4.0 mm. Carapace 1.5 mm long, with cephalic projection, 1.2 mm without. First femur, 5.5 mm; patella and tibia, 4.8 mm; metatarsus, 3.0 mm; tarsus, 1.6 mm.

Female from same locality. Color as in male except that palpi have a dark gray ventral line. Carapace, eyes, clypeus and legs as in male. Abdomen not so slender as in male and usually longer with tip blunt and setae as in male. Shape of posterior part variable as in male. Total length 4.3 mm. Carapace 1.3 mm long. First femur, 7.0 mm; patella and tibia, 6.0 mm; metatarsus, 3.8 mm; tarsus, 2.0 mm.

Figure 17 was prepared from the type, Figures 36-38 from a paratype.

Variation. There seems to be considerable geographic variation of the male carapace projection (Figs. 17-22). The male type and female paratype show significant differences from Panamanian specimens. The carapace projection of the type is heavier (Fig. 17). Unfortunately the carapace of the type is badly damaged and palpi are missing. The connecting ducts of the female paratype are considerably wider and more heavily sclerotized near the opening (Fig. 37). The abdomen of the female paratype is longer (Fig. 36) than in specimens from Panama (Fig. 35).

Diagnosis. The shape of the cephalic projection of the male (Figs. 17-22) is diagnostic. The genital structures are similar to those of *A. honestus*. The embolus is U-shaped. The radix is

flat, elongate, one edge entire, the inner margin expanded medially, then contracting to form a broad hook distally which, unlike the hook of related species, has only few teeth. Conductor long, membranous, leaf-like, with distal end approaching tip of embolus (Fig. 16). The palpus of *A. metaltissimus* differs from that of *A. honestus* in having a shorter, straighter embolic tube, and a wider space between tube and basal part. The epigynum is lightly sclerotized (Figs. 38, 40). The tubes extend some distance laterally (Figs. 37, 39) while in *A. honestus* the tubes extend posteriorly and are parallel. The tubes are somewhat sclerotized, often diminishing in size toward receptacles (Figs. 37, 39).

Distribution. Panama, Venezuela to central Brazil; Map 2.

Records. *Panama Canal Zone:* Barro Colorado Isl., ♀ ♂ (N. Banks; A. M. Chickering). *Lesser Antilles. Trinidad:* Simla near Arima, Dec. 29-30, 1954, ♀ ♂; Feb. 28, 1959, ♂ (A. M. Nadler). *Venezuela. Aragua:* Rancho Grande, Dec. 20, 1954, ♂ (A. M. Nadler). *Brazil. Mato Grosso:* Chavantina, ♀ paratype.

ARGYRODES PARADOXUS Taczanowski

Figures 23-25, 44-50; Map 2

Argyrodes paradoxa Taczanowski, 1872 (1873), Horae Soc. Ent. Rossicae, vol. 9, p. 121, pl. 5, fig. 13. Female type from Cayenne, French Guiana, in the Polish Academy of Sciences, Warsaw, examined by Levi.

Ariamnes spinicaudatus Keyserling, 1884, Die Spinnen Amerikas, Theridiidae, pt. 1, p. 171, pl. 8, fig. 104. Immature male here designated lectotype from Amable María [dept. Junín, prov. Tarma], Peru, in the Polish Academy of Sciences, Warsaw, examined by Levi. NEW SYNONYMY.

Rhomphaea petrunkevitchi Mello-Leitão, 1945, Trans. Connecticut Acad. Sci., vol. 36, p. 171, fig. 1. Male type from Jaraguá, Goiás, Brazil, in the Museu Nacional, Rio de Janeiro, not available for examination. NEW SYNONYMY.

Note. Identification of Panamanian material with *Ariamnes spinicaudatus* is based on unusually long, curved embolus, as seen through palpal cuticle of immature lectotype (Fig. 25).

Description. Male from Panama Canal Zone. Carapace bright yellow with a dark gray band on each lateral margin posteriorly, and a gray band from anterior median eyes to tip of chelicerae. Cephalic projection a little darker than rest of carapace. Palpi with ventral, dark gray stripe. Sternum yellow with a pair of wide gray bands joining anteriorly and posteriorly. Legs yellow with irregular light brown annulations. Abdomen yellow with large grayish patches thickly interspersed with silvery spots.

Clypeus high and steep, nearly as high as chelicerae are long. Eyes on common tubercle, those of each side close together. Median eyes widely separated, anterior medians largest. Long, stout cephalic projection arising from median ocular area ending in a blunt dorsal tip and a longer setae-bearing, ventral tip (Fig. 24). Chelicerae weak, armed with a long tooth on anterior margin of fang groove, two small teeth on posterior margin. Abdomen slender, extending beyond spinnerets, ending in a short, stiff spine. Total length including cephalic projection, 5.5 mm. Carapace 1.6 mm long with, 1.1 mm without projection. First femur, 4.8 mm; patella and tibia, 4.6 mm; metatarsus, 2.6 mm; tarsus, 1.3 mm.

Female from same locality. Cephalothorax as in male but pattern reddish brown rather than gray, with additional streaks on carapace and legs, anterior tibiae entirely reddish brown underneath. Abdomen as in male but darker, and silvery flecks evenly and thickly distributed over integument. Carapace, eyes, chelicerae as in male but without projection. Abdomen larger, heavier, shaped approximately as in male and with a short spine at posterior tip (Fig. 44). Total length 5.2 mm. Carapace 1.5 mm long. First femur, 7.0 mm; patella and tibia, 6.0 mm; metatarsus, 3.4 mm; tarsus, 1.6 mm.

Figures 45 and 46 were prepared from the type of *A. paradoxus*; Figure 25 from the type of *Ariamnes spinicaudatus*.

Variation. The epigynum (Figs. 46, 49) is quite variable and the ducts vary in length (Figs. 45, 48). Unfortunately too few males were available to study variation.

Diagnosis. This species is often darker than others of the *Rhomphaea* group. The size and shape of the cephalic projection (Fig. 24) separate males from other species. Unlike related species, the embolus is long and hook-shaped. The conductor is long, membranous; the radix is long, slender, somewhat curved at tip (Fig. 23). The epigynum is diagnostic, having a posterior depression, bordered by a variable ridge anteriorly, in front of which is a pair of large, sometimes indistinct, openings (Figs. 46, 49). The seminal receptacles are large, oval, almost touching. The long tubes form a pair of lateral loops on each side (Figs. 45, 48).

Distribution. Mexico, Peru to Minas Gerais; Map 2.

Records. *Mexico.* Veracruz: 16 km S of San José del Carmen, April 16, 1953, ♀ (L. I. Davis). *Panama.* El Volcán, Chiriquí, Feb. 19, 1936, ♀ (W. J. Gertsch); Cerro Punta, Chiriquí, March 4, 1936, ♀ (W. J. Gertsch). *Panama Canal Zone:* Barro Colorado Isl., July 1936, ♀; Aug. 1936, ♀; June 1939, ♀; Aug.

1950, ♀ ; July 1954, ♂ ; Aug. 14, 1954, ♀ ♂ ; Summit, July 1950, ♂ ; Experimental Gardens (all A. M. Chickering). *Venezuela*. ? *Dist. Fed.*: Hacienda Corosal near Mt. La Silla, 1888, ♀ (E. Simon, MNHN). *Brazil. Minas Gerais*: Caraca (E. Gounelle, MNHN).

The *A. trigonum* species group

ARGYRODES OBSCURUS Keyserling

Figures 79-83; Map 3

Argyrodes montanus Keyserling, 1884, *Die Spinnen Amerikas, Theridiidae*, pt. 1, p. 193, pl. 9, fig. 115. Female type from Montana di Nancho, [? Cajamarca], 8000' elev. [2550 m], Peru, in the Polish Academy of Sciences, Warsaw, examined by Levi.

Argyrodes obscurus Keyserling, 1884, *op. cit.*, p. 194, pl. 9, fig. 116. Male from Montana di Nancho, [? Cajamarca], 8000' elev. [2550 m], Peru, in the Polish Academy of Sciences, Warsaw, examined by Levi. NEW SYNONYMY.

Note. The name of the male type is chosen as the name of the species, because males are easier to determine.

Description. Female from Huánuco, Peru. Carapace orange-brown, legs a little paler. Sternum reddish brown. Dorsum of abdomen pale gray anteriorly, nearly black posteriorly; sides and venter dark reddish gray becoming red toward tip of abdomen. Eyes small, nearly equal in size. Anterior medians separated by two diameters; area occupied by median eyes forming a square. Clypeus high, steep, with a deep furrow under eyes (Fig. 79). Abdomen extending beyond spinnerets, with conspicuously bifurcated tip. Total length 3.8 mm. Carapace 1.4 mm long. First femur, 2.8 mm; patella and tibia, 2.4 mm; metatarsus, 1.5 mm.

Figures 79 and 80 were prepared from the type of *A. obscurus*; Figures 81-83 from the type of *A. montanus*.

Diagnosis. The cephalic process of the male is more blunt and the clypeal process shorter (Fig. 79) than in other South American species. The process differs in shape from that of *A. concisus*. The embolus of the palpus is short and narrow. The radix is long with parallel sides (Fig. 80). The eyes are smaller than in related species. The anterior median eyes of the female are unusually widely separated. The median ridge of the epigynum is long and wide and becomes wider anteriorly with a small anterior depression (Fig. 83). The openings are nearly invisible. The seminal receptacles are separated by little more than a radius (Fig. 82).

Records. Peru. Huánuco: Monzón Valley, near Tingo María, Oct. 15, 1954, ♀ (E. I. Schlinger, E. S. Ross).

ARGYRODES FURCATUS (O.P.-Cambridge)

Figures 84-88; Map 3

Ariamnes furcata O.P.-Cambridge, 1898, *Biologia Centrali-Americana, Araneidea*, vol. 1, p. 129, pl. 17, fig. 10. Female type from Teapa, Tabasco [Mexico], in the British Museum (Natural History), examined by Levi.

Argyrodes furcata O.P.-Cambridge, 1898, *op. cit.*, p. 258, pl. 38, fig. 3. Female type from Omilteme, Guerrero, 9500 ft. [2900 m, Mexico], in the British Museum (Natural History), examined by Levi. NEW SYNONYMY.

Argyrodes trigonus, F.P.-Cambridge, 1902, *Biologia Centrali-Americana, Araneidea*, vol. 2, p. 404, pl. 38, figs. 7, 8. Not *A. trigonum* (Hentz).

Rhomphaca furcata, F.P.-Cambridge, 1902, *op. cit.*, vol. 2, p. 407, pl. 38, fig. 15. For *Ariamnes furcata* O.P.-Cambridge.

Rhomphaea bifissa F.P.-Cambridge, 1902, *op. cit.*, p. 407, pl. 38, fig. 16. New name for *Argyrodes furcata* O.P.-Cambridge, preoccupied by *Ariamnes furcata* O.P.-Cambridge. Kraus, 1955, *Abhandl. Senckenbergischen Naturf. Gesell.*, vol. 493, p. 16. NEW SYNONYMY.

Argyrodes frontatus Banks, 1908, *Canadian Ent.*, vol. 40, p. 208, fig. 9, upper right. Syntypes from Ocean Springs, [Jackson Co.], Mississippi, in the Museum of Comparative Zoology, examined by Levi. NEW SYNONYMY.

Conopistha trigonum, Bryant, 1940, *Bull. Mus. Comp. Zool.*, vol. 86, p. 308. Not *A. trigonum* (Hentz).

Conopistha rufa, Chamberlin and Ivie, 1944, *Bull. Univ. Utah, biol. ser.*, vol. 8, no. 5, p. 38. Probably not *Linyphia rufa* Walckenaer.

Note. *Linyphia rufa* Walckenaer, 1841 (*Histoire Naturelle des Insectes Aptères*, vol. 2, p. 284) was resurrected by Chamberlin and Ivie, 1944, as an older name for *A. trigonum* (Hentz), based on a series of specimens collected in Georgia, which, however, belong to *A. furcatus*. Both species, *A. furcatus* and *A. trigonum*, are found in Georgia, although the former is far more common. No diagnostic characters are mentioned by Walckenaer, nor reproduced in Abbot's drawings. Since *L. rufa* has seldom been used for *trigonum* and never for *furcatus*, it seems best to consider it a doubtful name.

Description. Male from Mississippi. Color varies from pale whitish to dark gray or dusky black sclerotized parts. Abdomen silvery white with pale gray to black on light background. Area over lungs pale yellow. Carapace with a short cone-shaped head process, and a short clypeal process, which is blunt and at an

angle to clypeus (Fig. 84). Eyes medium sized. Posterior medians more than two diameters apart, and more than a radius from laterals. Abdomen sometimes long, with tip sometimes blunt, but usually bifurcate. Total length 2.7 mm. Carapace 1.2 mm long. First femur, 2.3 mm; patella and tibia, 1.8 mm; metatarsus, 1.4 mm; tarsus, 0.7 mm.

Female from Mississippi. Color as in male. Abdomen, however, has dark lanceolate mark on dorsum. Anterior median eyes about a diameter and a half apart. Posterior median eyes almost three diameters apart, nearly a diameter from laterals. Clypeus high. Abdomen as in male, but larger (Fig. 86). Total length 3.7 mm. Carapace 1.1 mm long. First femur, 2.6 mm; patella and tibia, 2.1 mm; metatarsus, 1.4 mm; tarsus, 0.8 mm.

Figures 86-88 were prepared from the type of *Ariamnes furcatus*.

Variation. Color variation is very marked in this species and may vary with the amount of sunshine to which the spider has been exposed. Light specimens are often found in sunny situations, dark specimens in shade. Specimens from the same area may vary from very pale gray to nearly black. A few have a reddish cast, especially on sternum and venter of abdomen. In female, shape and size of abdomen depend on stage of egg development. In large populations, individuals tend to be smaller than in small populations. Males vary from 2.3 to 3.4 mm; females from 3.0 to 4.0 mm. The length of the clypeal process of males is somewhat variable.

Diagnosis. The males of this species can readily be separated from *A. trigonum* by the difference in shape of the processes (Fig. 84). The radix of the palpus (Fig. 85) is much longer than wide and has several rows of evenly spaced denticles at its tip, whereas that of *A. baboquivari* is as wide as long. The epigynum (Fig. 88) has the median ridge shorter, higher and wider than in *A. trigonum*. The ridge is formed by the raised ends of the paired connecting canals; the opening is anterior but difficult to see. The ridge is about 0.06 mm wide while that of *A. baboquivari* is about 0.13 mm wide. The connecting canals (Fig. 87) are very short.

Natural History. (See introduction.)

Distribution. Southeastern United States, from South Carolina along the Gulf Shore of Mexico, south to El Salvador; southern California and the Greater Antilles; Map 3.

Records. *United States. South Carolina.* Charleston (J. H. Emerton). *Georgia.* Bibb Co.: near Macon. Burke Co.: between

Sardis and Waynesboro. Crisp Co.: Cordele. Lowndes Co.: near Valdosta (W. J. Gertsch). Screven Co.: N of Sylvania. Turner Co.: Ashburn (W. J. Gertsch). Ware Co.: Waycross (W. J. Gertsch). *Florida*. Alachua Co.: near Gainesville (R. V. Chamberlin). Collier Co.: Naples (R. Forster, W. J. Gertsch). De Soto Co.: near Arcadia (W. J. Gertsch). Highlands Co.: Lake Placid. Indian River Co.: Sebastian (G. Nelson). Jackson Co.: Marianna. Lake Co.: Leesburg (M. Statham). Lee Co.: Ft. Myers (W. M. Barrows). Levy Co.: Williston (R. V. Chamberlin). Saint Johns Co.: Hastings. *Alabama*. Baldwin Co.: Silver Hill (G. Nelson); Oak Air Park (A. F. Archer); Lagoon (A. F. Archer). Mobile Co.: near Chunchula (A. F. Archer). Morgan Co.: Decatur (A. F. Archer). *Mississippi*. Bolivar Co.: Shelby. Forrest Co.: Camp Shelby (A. F. Archer). Wilkinson Co.: Centreville. *Texas*. Anderson Co.: Palestine (O. Sanders). Atascosa Co.: near San Antonio (S. Mulaik). Bexar Co.: San Antonio. Cameron Co.: Arroyo Colorado (S. Mulaik); Harlingen (C. J. Goodnight). Frio Co.: Pearsall (L. I. Davis). Harris Co.: Houston (S. Mulaik). Harrison Co.: Marshall (S. Mulaik). Henderson Co.: 10 mi. E of Athens (O. Sanders). Hidalgo Co.: Weslaco (S. Mulaik); Edinburg (S. Mulaik); Mission (S. Mulaik). Jasper Co.: Jasper (S. Mulaik). Kleberg Co.: Kingsville (S. Mulaik). Newton Co.: Bon Wier. Polk Co.: Livingston (L. I. Davis). Starr Co.: Rio Grande City (S. Mulaik). Travis Co.: Onion Cr. (H. Frizzell); Austin (O. Sanders, H. E., D. L. Frizzell). *California*. Orange Co.: Laguna Beach, June 1931 (R. V. Chamberlin).

Mexico. *Tamaulipas*: Reynosa (S. Mulaik); near Villa Juárez (A. M., L. I. Davis). *Nuevo León*: Linares (L. I. Davis). *San Luis Potosí*: Valles (L. Steude); 36 km S of Valles (A. M. Davis). *Jalisco*: Ajijic (A. Archer). *Guerrero*: Omilteme (F. D. Godman, H. H. Smith). *Tabasco*: (O.P.-Cambridge, 1878). *Chiapas*: Las Cruces Arriaga (H. Wagner). *El Salvador*: Los Chorros, W of Santa Tecla, 700 m elev. (H. Peters).

Bahama Isl. Crooked Isl.: Major Cay Settlement (A. W. Scott). *Cuba*. Pinar del Río: San Vicente (A. F. Archer). Habana: Finca Somorrostro (A. F. Archer). Las Valles: Soledad (N. Banks). Oriente: Banes (A. F. Archer). *Jamaica*: St. Catherine Par.: Hellshire Hills; Pt. Henderson (A. F. Archer). *Haiti*. Port-au-Prince (A. F. Archer); Carrefour (A. F. Archer). *Dominican Republic*. Barahona Prov.: Sierra Martín García (A. F. Archer). Distrito de Santo Domingo: Boca Chica (A. M. Nadler); Ciudad Trujillo (A. M. Nadler). *Mona Isl.* (Serrallés).

ARGYRODES BABOQUIVARI new species

Figures 89-94; Map 3

Type. Male from Molino Basin, Santa Catalina Mts., 1300 m elev., Pima County, Arizona, July 9, 1960 (J. A. Beatty), in the Museum of Comparative Zoology. The specific name is a noun in apposition, after the mountain range where the species is common.

Description. Male. Carapace yellowish with some light gray radiating lines. Sternum, legs yellow. Abdomen with pale grayish background and a large number of irregular silvery spots, sometimes with tan streaks. A dark patch between tips of bifurcation; dorsum with a median lanceolate mark. Cephalic process short and broad, its tip pointing forward and having some stiff setae (Fig. 89). Clypeal process long, similar to that of *A. furcatus*, but arising a little lower. Eyes small, subequal in size. Posterior median eyes about three diameters apart, one diameter from laterals. Abdomen as in other species, bifurcation sometimes barely visible. Total length of male holotype 3.5 mm. Carapace 1.4 mm long. First femur, 2.5 mm; patella and tibia, 2.6 mm; metatarsus, 1.2 mm; tarsus, 0.7 mm. The total length of this species varies from 3.3 to 4.5 mm.

Female. Color pattern as in male, but more variable and mostly pale. Abdomen very high so that tips are hardly posterior to spinnerets (Fig. 91). Some females almost lack the bifurcation. Total length of female 3.7 mm. Carapace 1.6 mm long. First femur, 3.2 mm; patella and tibia, 3.0 mm; metatarsus, 1.9 mm; tarsus, 0.9 mm. Length varies from 3.1 to 5.5 mm.

Diagnosis. This species is slightly larger than *A. furcatus*; the carapace of females is generally 1.4 to 1.6 mm long, that of *A. furcatus* less than 1.3 mm long in western Mexico. The eyes of females are larger, about two diameters apart; those of *A. furcatus* are more than two diameters apart. The cephalic process of the male is more pointed in front and a little longer and different in shape (Fig. 89). The radix of the male palpus is conspicuously wider with a median, toothed swelling (Fig. 90). The epigynum has the median raised area (Figs. 93, 94) larger, higher and more heavily sclerotized than in other species, and the openings are more ventral, larger and more easily seen. The width of the median raised area is about 0.12 mm, while in *A. furcatus* it is less than 0.06 mm. Females, however, may at times be difficult to separate from *A. furcatus*. Some specimens from Sonora have the median area bulging with the sides not well delineated.

Natural History. One female was collected from a "web between foliage and rock" by J. A. Beatty, a male from "under overhanging rock-ledge" in Arizona. The same collector found spiders "in *Latrodectus* web on rock," "in web on Agave along edge of dry wash," "in web in rocky ravine with *Diguetia*, *Theridion*" and "along with *Uloborus* in palm filled canyon" in Sonora.

Distribution. Southeastern Arizona, Chihuahua, Sonora; Map 3.

Records. United States. Arizona. Cochise Co.: South Fork, Cave Creek, near Portal, Sept. 11, 1950, June 10, 13, 1958 (W. J., J. W. Gertsch, Alexander). Graham Co.: Mt. Graham, July 14, 1956 (W. J. Gertsch, V. Roth). Pima Co.: Brown Canyon, Baboquivari Mts., June 9, 1960, ♀ ♂ (M. Cazier, W. J. Gertsch, R. Schrammel), July 19, 1959, ♀ ♂ (V. Roth); Bear Canyon, Santa Catalina Mts., 1700 m elev., Aug. 26, 1960, ♀ (J. A. Beatty); Molino Basin, Santa Catalina Mts., 1300 m elev., Aug. 3, 1960, ♀ ♂ paratypes (J. A. Beatty).

Mexico. Chihuahua: 5 km W of Matachie, July 7, 1947 (W. J. Gertsch). *Sonora:* mts. 26 km E of Magdalena, 1200 m elev., July 16, 1960, ♀ (J. A. Beatty); El Coyote, 28 km E of Río Bavispe, 1100 m elev., July 20-21, 1960, ♀ ♂ (J. A. Beatty).

ARGYRODES CONCISUS new species

Figures 56-60; Map 3

Type. Male from Tamazunchale, San Luis Potosí, Mexico, May 20, 1952 (M. Cazier, W. J. Gertsch, and R. Schrammel), in the American Museum of Natural History. The specific name is a Latin adjective meaning pruned or cropped, referring to the short head process.

Description. Carapace golden yellow with some gray on margins. Sternum yellow, reddish in center. Legs golden yellow with distal segments darker. Abdomen with pale gray background, overlaid with red posteriorly on dorsum, and sides covered with silvery markings. Thoracic groove not so conspicuous as in other species. Cephalic projection small, low and blunt. Clypeal projection also very small (Fig. 56). Eyes large with anterior medians much larger than others, separated by less than a diameter, almost touching laterals. Posterior median eyes separated by a little more than a diameter, about a radius from laterals. Abdomen with bifurcated tip as in other species. Total length 2.3 mm. Carapace 1.10 mm long. First femur, 1.96 mm;

patella and tibia, 2.00 mm; metatarsus, 1.18 mm; tarsus, 0.66 mm.

Female. Coloration similar to that of male. Eyes also large, anterior medians not quite a diameter apart, almost touching laterals. Posterior eyes as in male. Abdomen with two posterior dorsal tips (Fig. 58). Total length 3.5 mm. Carapace 1.55 mm long. First femur, 3.0 mm; patella and tibia, 2.6 mm; metatarsus, 1.4 mm; tarsus, 0.8 mm.

Diagnosis. *Argyrodes concisus* can be separated from *A. furcatus* and other species by the large eyes and short cephalic and clypeal projections (Fig. 56). Palpus (Fig. 57) similar to other species; the radix is short and narrow with denticles at its tip. The epigynum (Fig. 60) has a long median ridge, anterior to which are very indistinct openings.

Distribution. Northeastern Mexico: Map 3.

Records. Mexico. Veracruz: Tlapacoyan, 100 m elev., July 7-8, 1946, 2 ♀ (H. Wagner).

ARGYRODES PARVUS (Exline), new combination

Figures 51-55; Map 3

Ncospintharus parvus Exline, 1950, in Studies Honoring Trevor Kincaid, Univ. Washington Press, p. 112, pl. 1, figs. 2, 4. Female type from Prov. Guayas, Ecuador, lost.

Description. Male from Panama. Carapace, legs dusky yellow; cephalic projection orange. Sternum pale yellow. Abdomen with pale gray background, thickly covered with silvery spots, darker gray at tip and on lower sides. Cephalic projection wide, broadly rounded dorsally and projecting only slightly forward; clypeal projection short, pointing up (Fig. 51). Both projections with scattered setae. Eyes almost equal in size, lateral eyes almost touching. Posterior median eyes nearly three diameters apart. Abdomen extending high above and a little beyond spinnerets, wide and slightly bifurcate at tip. Total length 2.8 mm. Carapace 1.1 mm long. First femur, 2.2 mm; patella and tibia, 2.1 mm; metatarsus, 1.3 mm; tarsus, 0.7 mm. A male from Barro Colorado is darker with carapace mostly gray, legs brownish yellow and abdomen mostly dark gray with a pair of silvery white bands on each side of dorsum.

Female. Carapace brown and dark gray. Sternum reddish brown. Legs chestnut brown. Abdomen dark gray becoming reddish posteriorly and on venter, with a pair of large white bands on dorsum. Anterior median eyes a little larger than others; eyes spaced as in male, except that posterior medians are

not quite so far apart. Clypeus high and sloping. Abdomen as in male, wrinkled and slightly bifurcate at posterior tip (Fig. 53). Total length 3.9 mm. Carapace 1.4 mm long. First femur, 2.9 mm; patella and tibia, 2.6 mm; metatarsus, 1.5 mm; tarsus, 0.8 mm.

Diagnosis. The male is distinguished by the shape of the cephalic and clypeal projections (Fig. 51). The palpal radix is short with parallel sides, finely denticulate on its anterior margin. The embolus is long, narrow, with a pointed tip (Fig. 52). The inflated end of the conductor projects over the tip of the embolus. The female is difficult to distinguish from *A. trigonum* from the eastern United States and from *A. obscurus* from Peru. The genital area is pale with a very long, narrow median ridge (Fig. 55). The tubes are arched and longer than in related species, with the seminal receptacles a little over a radius apart (Fig. 54). It is not quite certain if the described specimens belong to *A. parvus* whose type is lost.

Distribution. Panama to Ecuador; Map 3.

Records. Panama. Boquete, Aug. 1939, ♂; Aug. 1950, ♀ (A. M. Chickering). Panama Canal Zone. Barro Colorado Isl., Aug. 1939, ♂ (A. M. Chickering).

ARGYRODES TRIGONUM (Hentz)

Figures 66-78; Map 3

- Theridion trigonum* Hentz, 1850, Jour. Boston Soc. Nat. Hist., vol. 6, p. 280, pl. 9, figs. 24, 25; 1875, The spiders of the United States, p. 152, pl. 16, figs. 24, 25; pl. 19, figs. 117, 131. Type from Alabama, lost.
- Argyrodes trigonum*, Emerton, 1882, Trans. Connecticut Acad. Sci., vol. 6, p. 23, pl. 5, fig. 1; 1902, The Common Spiders, p. 124, figs. 292-295. Simon, 1894, Histoire Naturelle des Araignées, vol. 1, p. 499, fig. 504. Roewer, 1942, Katalog der Araneae, vol. 1, p. 439, in part.
- Argyrodes argyrodes*, Keyserling, 1884, Die Spinnen Amerikas, Theridiidae, pt. 1, p. 181, pl. 8, fig. 109. Bonnet, 1955, Bibliographia Araneorum, vol. 2, pt. 1, p. 708, in part. Not *Argyrodes argyrodes* (Walckenaer).
- Conopistha trigona*, Kaston, 1948, Bull. Connecticut Geol. Nat. Hist. Surv., no. 70, p. 88, pl. 4, figs. 73-79.
- Conopistha rufa*, Archer, 1946, Paper Alabama Mus. Nat. Hist., no. 22, p. 26. Probably not *Linyphia rufa* Walckenaer, a *nomen dubium*.

Note. The specific name is used as a noun in apposition, as suggested by Bonnet, 1955.

Description. Male from Alabama. Carapace yellow with some gray except in head region. Sternum, legs yellow with some gray. Abdomen light gray with silvery spots and a large lanceolate

mark on dorsum; posterior darker than sides. Cephalic process unusually long and high, blunt and bearing setae at tip. Clypeus with a long, projecting median process, paralleling process of head. Clypeal process longer than in other species, slightly tapering toward tip where it is enlarged and bears setae (Figs. 66, 78). Eyes small. Anterior median eyes very close to laterals. Posterior median eyes separated by more than two diameters and nearly a diameter from laterals. Abdomen nearly triangular (Fig. 78). Total length 2.5 mm. Carapace 1.2 mm long. First femur, 2.6 mm; patella and tibia, 2.6 mm; metatarsus, 1.6 mm. Female. Slightly darker and browner than male. Venter of abdomen darker than dorsum. Head region slightly elevated with narrow groove under eyes. Clypeus quite high, somewhat rounded underneath groove. Eyes similar to those of male. Abdomen with posterior bifurcation; extending well above and posterior to spinnerets (Figs. 69-73). Total length of a female from Alabama 4.2 mm. Carapace 1.5 mm long. First femur, 3.9 mm; patella and tibia, 3.6 mm; metatarsus, 2.2 mm; tarsus, 0.9 mm.

Variation. Size variation is slight in males, great in females. Coloration and shape of abdomen is extremely variable (Figs. 69-73). Some specimens have golden rather than silvery spots on the abdomen; in some specimens from Florida the posterior spots are overlaid with red. The abdomen is conspicuously bifurcate in many specimens, almost blunt in others. In some males the head process is longer than the clypeal process, in others the clypeal process is longer. Most males have a knob at the end of the clypeal process; some lack it. The male embolus varies somewhat in length; it may be as long as the radix. The epigynum varies depending on amount of sclerotization and whether or not the spider has mated.

Diagnosis. Males can be separated from related species by the shape of the cephalic and clypeal projections (Figs. 66, 78) and by the shape of the palpal parts (Fig. 67). The radix is wide, somewhat concave and has many denticles at its distal margin. The epigynum (Fig. 75) has a central sclerotized area with a median ridge anterior to which are the openings. The seminal receptacles (Fig. 74) are their radius apart.

Natural History. *Argyrodes trigonum* is usually commensal in the webs of larger spiders, especially orb-weavers, but it has been collected also from webs of *Agelenopsis* and *Latrodectus*. Lamore (1958, Proc. Ent. Soc. Washington, vol. 60, p. 286) reports it as a frequent commensal in the webs of *Allepeira lemniscata* (Walekenaer) in Maryland, and in one case the host was eaten

by *A. trigonum*. Emerton collected it in the webs of *Theridion zelotypum* Emerton in Maine, in webs of *Linyphia marginata* C. L. Koch and *Agelenopsis* in Massachusetts. In Michigan it has been collected in pine forest, in hemlock, and probably in maple-basswood forest in Wisconsin. Beatty collected juveniles in hemlock-hardwood forest and in "short mine tunnel along with *Meta* and *Theridiosoma*" in Ohio.

Distribution. Ontario, eastern United States, from Maine to Florida, central Wisconsin, Arkansas to eastern Texas; Map 3.

Records. *Canada.* Ontario. Norfolk Co.: Turkey Pt. (A. Nadler). *United States.* *Maine.* Cumberland Co.: Casco Bay (J. H. Emerton). Piscataquis Co.: Katahdin Stream Camp, juv. (H., L. Levi). *New Hampshire.* Carroll Co.: Intervale (E. B. Bryant). Hillsborough Co.: Hollis. *Massachusetts.* Essex Co.: Amesbury (J. H. Emerton). *Connecticut.* New Haven (J. H. Emerton); South Meriden. *New York.* Cayuga Co.: Cayuga. Jefferson Co.: Woodville (S. C. Bishop). Nassau Co.: Sea Cliff, Hampstead Plains. Suffolk Co.: Cold Spring Harbor (J. H. Emerton). Tompkins Co.: Ithaca, West Danby. Yates Co.: Penn Yan. *New Jersey.* Ocean Co.: Lakehurst (J. Hallan). *Ohio.* Ashland Co.: Mohican Park, juv. (J. A. Beatty). Hocking Co.: Rockbridge. *Pennsylvania.* Columbia Co.: Orangeville. *West Virginia.* Pocahontas Co.: Minnehaha Springs (K. W. Haller). *Virginia.* Brunswick Co.: Alberta. Fairfax Co.: Falls Church (N. Banks). *Kentucky.* Breathitt Co.: Nobel (Buckhorn). Edmonson Co.: near Mammoth Cave. *Tennessee.* Grundy Co.: Beersheba. *North Carolina.* Avery Co.: Linville (J. H. Emerton). Buncombe Co.: Black Mountain (N. Banks); Ridgecrest (A. F. Archer). Durham Co.: Duke Forest (H., L. Levi). Guilford Co.: Greenboro (R. D. Barnes). Haywood Co.: Canton (N. Banks). Macon Co.: Highlands (A. F. Archer); Cullasaja Canyon (M. H., A. F. Archer). Yadkin Co.: Yadkinville. *Georgia.* Okefinokee Swamp. Rabun Co.: Clayton (J. C. Bradley). *Florida.* Alachua Co.: W of Gainesville. Highlands Co.: Sebring. Liberty Co.: Torreya State Park (W. J. Gertsch, R. Forster). Okaloosa Co.: Crestview (R. V. Chamberlin). *Alabama.* De Kalb Co.: De Soto State Park (A. F. Archer). Hale Co.: Moundville (A. F. Archer). Morgan Co.: Decatur (A. F. Archer); Trinity Mt. (M. Hanson, A. F. Archer). Tuscaloosa Co.: Tuscaloosa (A. F. Archer). ? Winston Co.: Bankhead Natl. For. (A. F. Archer). *Mississippi.* Wilkinson Co.: Centreville (A. F. Archer). *Michigan.* Crawford Co.: Hartwick Pines State Park, juv. (H., L. Levi). *Wisconsin.* Grant Co.: Wyalusing (H., L. Levi). Juneau

Co.: Rocky Arbor Park, juv. (H., L. Levi). Manitowoc Co.: Point Beach State Forest (H. Levi). Sauk Co.: The Dells (A. F. Archer); near North Freedom (A. Bakken). *Missouri*. Franklin Co.: Meramec Springs (H. E. Frizzell). Phelps Co.: Rolla (H. E. Frizzell). *Arkansas*. Washington Co.: 15 mi. S of Prairie Grove (M. Hite). *Texas*. Polk Co.: (R. H. Baker).

ARGYRODES BICORNIS O.P.-Cambridge

Figures 95, 96; Map 3

Argyrodes bicornis O.P.-Cambridge, 1880, Proc. Zool. Soc. London, p. 334, pl. 29, fig. 12. Male type from Paraná [Brazil], in the Hope Department of Entomology, Oxford University, examined by Levi.

Note. F.P.-Cambridge (1902, *Biologia Centrali-Americana*, Araneidea, vol. 2, p. 404) synonymized *A. bicornis* with *A. trigonum* and other authors have followed. Examination of the type indicates that *A. bicornis* is distinct. This species is only known from the type specimen.

Diagnosis. Unlike most related species, *A. bicornis* has the head process slender. The clypeal process is of about the same width and length (Fig. 95).

ARGYRODES RIOENSIS new species

Figures 61-65; Map 3

Type. Male from Teresópolis, 1000 m elev., Est. Rio de Janeiro, Brazil, March 12, 1946 (H. Sick), in the American Museum of Natural History. The name is an adjective, referring to the state of Rio de Janeiro.

Description. Male. Carapace golden yellow, reddish on margin. Sternum, legs yellow with some darker marks, especially on sides and between spinnerets and posterior tip; venter with median brown stripe. Head process short, heavy, curved at its dorsum with its tip projecting anteriorly. Clypeal process (Fig. 61) some distance from head process, slender, directed slightly upward, bearing at its tip stiff setae that point at a right angle to axis of process. Anterior eyes a little larger than others, separated by about a diameter. Other eyes subequal. Posterior median eyes separated by about a diameter and a third, less than a radius from laterals. Bifurcation at tip of abdomen conspicuous. Total length of male 3.1 mm. Carapace 1.1 mm long. First femur, 1.90 mm; patella and tibia, 1.78 mm; metatarsus, 1.26 mm; tarsus, 0.70 mm.

Female. Color similar to that of male, except legs a little paler, abdomen with dorsal gray reticulation and usually with a black mark toward posterior tip. Venter densely infused with red, usually with a reddish median, longitudinal stripe. Clypeus with a deep groove below eyes, high and arched forward below. Eyes as in male. Abdomen heavy and high (Fig. 63). Total length 3.6 mm. Carapace 1.1 mm long. First femur, 2.4 mm; patella and tibia, 1.9 mm; metatarsus, 1.3 mm; tarsus, 0.8 mm. Length of females examined from 3.2 to 3.7 mm.

Diagnosis. *Argyrodes rioensis* is separated from *A. bicornis* by differences in the head processes of the males (Fig. 61). The male palpus (Fig. 62) has the radix blunter and longer, and tipped with denticles. The epigynum (Fig. 65) has a slightly raised median ridge with a single opening slightly anterior to the seminal receptacles.

Distribution. Southeastern Brazil; Map 3.

Records. *Brazil. Ceara:* Serra Communaty, ♀ (E. Gounelle, MNHN). *Rio de Janeiro:* Teresópolis, March 1946, ♀ ♂ paratypes (H. Sick). *Santa Catarina:* Nova Teutonia, lat 27°11', long 52°23', ♂ (F. Plaumann, SMF).

ARGYRODES TRIANGULARIS Taczanowski

Figures 97, 98; Map 3

Argyrodes triangularis Taczanowski, 1872 (1873), Horae Soc. Ent. Rossicae, vol. 9, p. 123, pl. 5, fig. 14. Male type from Cayenne, [French Guiana], in the Polish Academy of Sciences, Warsaw, examined by Levi. Keyserling, 1884, Die Spinnen Amerikas, Theridiidae, pt. 1, p. 200, pl. 9, fig. 120.

Description. Male from Panama. Carapace and legs orange-yellow with a little gray. Sternum reddish orange. Abdomen pale gray with red on lower sides extending to dorsum posteriorly; posterior side and venter pale with large silvery patches. Head process narrowed to a point with stiff setae overlapping those on tip of clypeal process. Head process of type thicker at base (Fig. 97). Clypeal process very slender, longer than cephalic process except in type specimen. Eyes small except anterior medians; those of each side close together; posterior medians separated by two diameters. The abdomen (except in the type specimen) is bluntly bifurcate at posterior tip. Total length 3.2 mm. Carapace 1.3 mm long. First femur, 2.6 mm; patella and tibia, 2.5 mm; metatarsus, 1.4 mm; tarsus, 0.7 mm.

Figures 97, 98 were prepared from the type of *A. triangularis*.

Diagnosis. Although the Panamanian specimen differs in minor ways from the type, its identification as *A. triangularis* seems quite certain. The head and clypeal processes are diagnostic (Fig. 97). The palpal radix is expanded at the tip so that its mesal margin is almost at right angles to long axis of palpus, and the distal margin is finely denticulate. The widely expanded tip of the conductor touches the distal end of the long, narrow embolus (Fig. 98).

Distribution. Panama, French Guiana; Map 3.

Record. Panama Canal Zone. Barro Colorado Isl., July 1939, ♂ (A. M. Chickering).

The *Ariamnes* Group

ARGYRODES LONGISSIMUS (Keyserling), new combination

Figures 100-109; Map 4

Ariamnes longissimus Keyserling, 1891, Die Spinnen Amerikas, Brasilianische Spinnen, p. 202, pl. 7, fig. 145. Male and female syntypes from N. Freiburg [Nova Friburgo, Est. Rio de Janeiro], Espírito Santo, and St. Antonio on the Rio Pomba [Est. Rio de Janeiro], Brazil, in the British Museum (Natural History). Specimens examined by Levi. Göldi, 1892, Mitt. Osterlande, neue Folge, vol. 5, p. 224, 230, 233.

Description. Male from Est. Santa Catarina, Brazil. Carapace dusky yellow with a paler median band. Clypeus, chelicerae, proximal segments of palpi and sternum pale yellow. Legs dusky yellow with proximal segments of anterior legs yellowish brown. Abdomen grayish white with posterior part speckled gray. Carapace low and flat, slightly raised in eye region, with central tuft of curved setae between anterior lateral eyes (Fig. 101). Eyes all small, anterior and posterior median eyes about equal in size. Median ocular area square, eyes separated by more than a diameter and a half. Clypeus slightly concave below eyes, projecting above chelicerae. Chelicerae small and short. Legs moderately robust; anterior legs with enlarged setae under distal end of tibiae. One or two somewhat enlarged setae under proximal end of anterior metatarsi. Abdomen cylindrical, very long, tapering to sharp point, covered with setae, with cuticle showing some annulations. Total length, approximately 18.5 mm. Carapace 1.9 mm long. First femur, 5.7 mm; patella and tibia, 5.0 mm; metatarsus, 2.9 mm; tarsus, 1.5 mm. Another male is much paler than the one described.

Female from São Paulo, Brazil. Female colored like male but a little darker with an orange cast. Abdomen orange, thickly covered with golden flecks. Carapace as in male but with cephalic region low. Clypeus low, with very shallow groove under eyes. Chelicerae more robust than in male. Eyes small as in male but a little closer together. Abdomen even more elongate than in male (Fig. 100), with a pair of small dorsal sclerotized patches at base. Total length, approximately, 24.0 mm. Carapace 2.2 mm long. First femur, 7.5 mm; patella and tibia, 6.4 mm; metatarsus, 3.8 mm; tarsus, 1.6 mm.

Figures 102 and 108 were prepared from the syntypes.

Variation. The palpi of four males from different localities were not alike (Figs. 102-105). Two males from Est. Santa Catarina had similar palpi. The internal genitalia of two females differed (Figs. 106, 107). Too few specimens were available to decide whether there are several species or a single polymorphic species and most males and females were not collected together. We are treating the specimens as a single variable species.

Diagnosis. *Argyrodes longissimus* differs from *A. attenuatus* principally in structures of the genitalia. The radix of the male palpus is short and stout, with distal end broad. The embolus is drawn out into a long, heavy, curved tube (Figs. 102-105); partly hidden dorsally is the large thumb-like process of the embolus. The conductor is short, fleshy, and touches the embolus. The epigynum of the female has a protruding horizontal bar and the cuticle anterior to it is transversely ribbed (Figs. 108, 109). Openings to the tubes are posterior to bar. Tubes are wider than in *A. attenuatus*, tapering, and reach anterior end of receptacles (Figs. 106, 107). In some females the receptacles are curved toward one another.

Natural History. Göldi (1892), who collected specimens for Keyserling, reports that when touched, the spider moves its whip-like tail like an earthworm. "I have questioned why this adventurous long tail could be of special use, without obtaining an answer. Everytime I obtained an *Ariannes* by beating in the virgin forest, I was reminded of some of the smaller and delicate walking sticks of the genus *Bacillus*" (freely transl.).

Distribution. Southern Brazil; Map 4.

Records. *Brazil.* *Espírito Santo:* Santa Teresa, Jan. 26, 1959, ♂ (A. M. Nadler). *Minas Gerais:* Miracema on Rio Pomba (Göldi, 1892). *Rio de Janeiro:* near Santo Eduardo (Göldi, 1892); Colonia Alpina [Teresópolis], ♀ ♂ (E. Göldi, MNHN); Teresópolis, Nov. 1945, ♀ ♂, March 1946, ♀ (H. Sick). *São Paulo:* Jabaquara, Cidade São Paulo, Dec. 1945, ♀, juv. (H.

Sick). *Santa Catarina*: Nova Teutonia, lat $27^{\circ}11'$, long $52^{\circ}23'$, 2♂, juv. (F. Plaumann, SMF).

ARGYRODES HAITENSIS new species

Figures 110, 111; Map 4

Type. Female from 32 km from Aux Cayes, 330 m elev., Haiti, Aug. 28-29, 1935 (W. G. Hassler), in the American Museum of Natural History. The species is named after the type locality.

Description. Female. Carapace, sternum, mouthparts and legs bright yellow with a pair of narrow curved gray stripes posterior to eyes, and gray infusions opposite coxae on carapace. Abdomen very pale yellow anteriorly, becoming darker posteriorly, almost completely covered with silvery spots arranged in longitudinal rows. Carapace flat. Clypeus slightly higher than diameter of anterior median eyes, a little rounded with a very shallow groove under eyes, and leaving a gap between lower edge and base of chelicerae. Chelicerae short, robust. Eyes approximately equal in size; anterior medians separated by more than a diameter. Median eyes forming a square, very near lateral eyes. Region between anterior median eyes slightly protruding. Abdomen narrow, cylindrical, pointed at posterior tip and having some setae but without cuticular wrinkles. Total length approximately 30 mm. Carapace 1.9 mm long. First femur, 6.4 mm; patella and tibia, 5.5 mm; metatarsus, 3.4 mm; tarsus, 1.4 mm.

Variation. Female paratype with anterior median eyes larger than others, and area between them slightly raised.

Diagnosis. *Argyrodes haitensis* is similar to *A. approximatus*. The tubes of the epigynum are very slender with widely separated openings. Seminal receptacles elongate as in *A. approximatus*, but bent, meeting tubes halfway to openings, separated and somewhat bulging in middle (Fig. 110). The male is unknown.

Records. *Haiti*. 40 km from Aux Cayes, 660-1000 m elev., Aug. 29, 1935, ♀ paratype (W. G. Hassler).

ARGYRODES MEXICANUS new species

Figures 99, 112-115; Map 4

Type. Female from Villa Santiago, Horsetail Falls, 650 m elev., Nuevo León, Mexico, June 19, 1940 (H. Hoogstraal), in the Museum of Comparative Zoology. The name is a latinized adjective.

Description. Male from San Luis Potosí. Carapace dusky yellow with a paler median stripe, paler in cephalic region, clypeus and chelicerae. Sternum, legs brownish orange. Abdomen yellowish orange. Carapace flat and low, slightly elevated in eye region with setae on highest point (Fig. 112). Clypeus straight, moderately high with some setae. Anterior median eyes largest. Lateral eyes touching and smaller than posterior median eyes. Legs more robust than in related species. Abdomen very long, cylindrical, gently tapering. Total length approximately 25 mm. Carapace 1.3 mm long. First femur, 4.7 mm; patella and tibia, 3.8 mm; metatarsus, 2.6 mm; tarsus, 1.3 mm.

Female type colored like male. Abdomen thickly covered with golden flecks dorsally, silvery flecks ventrally. General structure as in male, except in eye region which is not elevated. Abdomen cylindrical, gently tapering, with rounded rather than pointed tip as in most species (Fig. 99). Total length approximately 40 mm. Carapace 2.6 mm long. First femur, 8.3 mm; patella and tibia, 6.6 mm; metatarsus, 4.7 mm; tarsus, 1.8 mm.

Diagnosis. The epigynum (Fig. 115) is flat with a curved transverse sclerotized ridge, some distance anterior to genital groove. The openings are anterior to ridge. Seminal receptacles are visible through the cuticle. Unlike other American species seminal receptacles are pear-shaped with tubes narrow throughout (Fig. 114). Unlike that of *A. attenuatus*, the embolus of the male palpus is diamond-shaped (Fig. 113). The radix is extended at its distal tip and slightly tuberculate.

Natural History. The male was collected in grass and wood under waterfall.

Distribution. Northern Mexico; Map 4.

Records. Mexico. San Luis Potosí: El Salto, Nov. 13, 1959, ♂ (C., S. Bolívar, J. M. Molina).

ARGYRODES ATTENUATUS (O.P.-Cambridge), new combination

Figures 118-127; Map 4

Ariamnes attenuatus O.P.-Cambridge, 1881, Proc. Zool. Soc. London, p. 770, pl. 66, fig. 3. Male, female syntypes from Amazons, Brazil, in the Hope Department of Entomology, Oxford University, examined by Levi. Bonnet, 1955, Bibliographia Araneorum, vol. 2, pt. 1, p. 739. Di Caporiacco, 1948, Proc. Zool. Soc. London, vol. 118, p. 650. Kritscher, 1957, Ann. Naturhist. Mus. Wien, vol. 61, p. 271, figs. 31, 32.

Ariamnes gracillima O.P.-Cambridge, 1894, Biologia Centrali-Americana, Araneidea, vol. 1, p. 129, pl. 17, fig. 9. Female type from Los Remedios

in Chiriquí, Panama, in the British Museum (Natural History), examined by Levi. F.P.-Cambridge, 1902, *Biologia Centrali-Americana, Araneidea*, vol. 2, p. 408, pl. 38, fig. 20. NEW SYNONYMY.

Ariamnes approximata O.P.-Cambridge, 1894, *op. cit.*, p. 130, pl. 17, fig. 8. Juvenile female (before final molt) type from Bugaba, Chiriquí, Panama, in the British Museum (Natural History), examined by Levi. F.P.-Cambridge, 1902, *op. cit.*, p. 408. NEW SYNONYMY.

Ariamnes longissimus, Simon, 1897, *Proc. Zool. Soc. London*, p. 521. Not *A. longissimus* Keyserling.

Ariamnes pulcher Soares and Camargo, 1948, *Bol. Mus. Paraense*, vol. 10, p. 364, fig. 13. Male type from Chavantina, Mato Grosso, Brazil, in the Departamento de Zoologia, Secretaria da Agricultura, São Paulo. NEW SYNONYMY.

Ariamnes sinuatus Schenkel, 1953, *Verh. Naturf. Gesell. Basel*, vol. 64, p. 10, fig. 10. Male type from near El Pozón, Dto. Acosta, Prov. Falcon, Venezuela, in the Naturhistorisches Museum, Basel, examined by Levi. NEW SYNONYMY.

Description. Male from Panama Canal Zone. Carapace yellow with marginal gray lines. Sternum pale yellow with median longitudinal gray line. Legs yellow, palpi nearly white except yellow and brown tarsi. Abdomen very pale yellow anteriorly infused with some gray, becoming completely gray beyond spinnerets and dotted with dark gray spots and silvery flecks. Carapace very low and flat, raised in median ocular area and between anterior median eyes. Highest point tipped with a small tuft of stiff anteriorly curved bristles; on its anterior face at level of the median anterior eyes a group of dorsally curved setae arises from a low keel (Fig. 118). Anterior and posterior median eyes equal in size. Eyes of each side close together; posterior medians separated by a diameter and a half. Clypeus high, straight, somewhat swollen above. Legs very slender, covered with short setae. Distal end of tibiae I and II with a group of spines underneath. Metatarsi I and II with a short heavy spine underneath at proximal end. Abdomen cylindrical. Cuticle of tail with annulate wrinkles, and thickly covered with long, fine setae. Tip of abdomen pointed. Abdomen often curled in alcoholic specimens. Total length 9.3 mm. Carapace 1.5 mm long. First femur, 5.9 mm; patella and tibia, 5.5 mm; metatarsus, 2.8 mm; tarsus, 1.5 mm.

Female from same locality. Color as in male with genital area orange. Carapace as in male but only slightly elevated and rounded between eyes. Eyes as in male. Clypeus lower, straight. Cheliceral fang groove with one tooth on each margin. Legs I and II without spines. Abdomen as in male, but longer and often

thicker (Fig. 127). Total length 16.5 mm. Carapace 2.1 mm long. First femur, 7.7 mm; patella and tibia, 7.1 mm; metatarsus, 4.0 mm; tarsus, 1.8 mm.

Variation. Southern specimens are slightly larger. The palpi of males seem alike (except for a male syntype specimen whose ducts seem slightly longer), the loop in the tegulum almost touching the large mesal portion of the duct, and the portion of the duct proximal to the loop being slightly wavy. There is, however, considerable variation in the epigyna. The projecting knob of the epigynum varies in shape; some individuals have the raised armlike anterior extensions long, others very short (Figs. 124, 125). There is considerable variation in shape of the seminal receptacles (Figs. 121-123).

Diagnosis. The palpus of *A. attenuatus* males bears a long armlike radix, widened, somewhat twisted and bordered at its tip with a comb of short, recurved setae. The embolus is flat with its mesal side extended into a long rounded arm, dorsally and anteriorly directed. A long stiff anterior spine bears the duct. The fleshy conductor is short, thumb-like, somewhat variable. The median apophysis is conspicuous, swollen at its anterior end (Figs. 119, 120). The epigynum has a projection with a round opening near the margin, and lateral ridges (Figs. 124, 125). Internally a pair of greatly elongated parallel seminal receptacles are close together. The tubes enter anteriorly and on the ectal side. Unlike *A. longissimus* the diameter of the tubes is about the same throughout (Figs. 121-123). The swelling in the eye region of *A. attenuatus* (Fig. 118) is different from that of *A. schlingeri*.

Natural History. Two egg cases filled with spiderlings were collected with a male and female *A. attenuatus* at Barro Colorado Island, July 1936 by A. M. Chickering. These are pale yellow, elongate, purse-like, approximately 48 mm long, 1½-2 mm wide (Fig. 3).

Distribution. Costa Rica, Lesser Antilles to Argentina; Map 4.

Records. *Costa Rica.* (SMF); Turrialba (Tristan), May 1944 (F. Schrader); San Isidro del General, 700-1400 m elev. (D. Rounds). *Panama Canal Zone.* Madden Dam, Sept. 6, 1956 (W. Lundy); Barro Colorado Isl. (many collections, A. M. Chickering); Forest Reserve (A. M. Chickering); Madden Dam (A. M. Chickering). *Lesser Antilles.* *St. Vincent Isl.* (H. H. Smith, BMNH). *Grenada.* Grand Etang, Sept. 1910 (R. Thaxter). *Colombia.* *Caqueta:* Río Orteguzaza, 200 m elev., Aug.-Sept. 1947 (L. Richter). *Venezuela.* "La Guaira, Tovar, San Esteban,"

1888 (E. Simon, MNHN). *Monagas*: Caripito, March 1942 (W. Beebe). *Aragua*: Maracay (SMF). *British Guiana*. Rockstone, Essequibo Riv., June 26, 1927 (P. Babiy); Rupununi Riv., near Mt. Makarapan, Oct. 5, 1937 (W. G. Hassler). *Surinam*. Para Dist., Apr. 21, 1927. *Peru*. *Loreto*: Iquitos, May 1920 (H. S. Parrish); Salt mine far up Río Pisqui, Sept. 1929 (H. B.). *Junín*: Huacapistana, Río Tarma, June 1-2, 1920; Colonia del Perené, June 18-20, 1920. *Brazil*. *Amapá*: Oiapoque, May 1959 (M. Alvarenga). *Ceara*: Serra Community (E. Gounelle, MNHN). *Guapuré*: Villa Murтинho, March-April 1922 (J. W. Williamson); Abunã, March 1922 (J. H. Williamson). *Amazonas*: ? Taperinha (Kritscher, 1957). *Paraguay*. Río Apa. *Alto Paraná*: Taguararapa. *Bolivia*. *Beni*: Rurrenabaque, Nov. 10, 1956 (L. Peña, ISNB). *Argentina*. *Jujuy*: San Juancito, Feb. 1920 (Cornell Univ. Exped.).

ARGYRODES SCHLINGERI new species

Figures 116, 117; Map 4

Type. Male from Yurac, 110 km east of Tingo María, Dept. Huánuco, Peru, Sept. 28, 1954 (R. I. Schlinger, E. S. Ross), in the California Academy of Sciences. This species is named for Mr. R. I. Schlinger.

Description. Carapace dusky yellow, paler in midline and in cephalic region, on clypeus, chelicerae, and proximal segments of palpi. Sternum yellow. Abdomen gray, thickly covered with dull silvery spots. Carapace flat with slight transverse ridge bearing setae in cephalic region. Clypeus short, rounded, projecting above chelicerae, bearing curved setae (Fig. 116). Anterior and posterior median eyes subequal in size. Eyes more widely separated than in related species. Anterior median eyes separated by more than a diameter. Chelicerae small. Legs slender, with anterior tibiae bearing spines at distal end on venter, but none on metatarsi. Abdomen very long and slender, cylindrical and tapering to sharp point, thickly covered with fine setae. Total length, approximately, 20 mm. Carapace 1.7 mm long. First femur, 6.3 mm; patella and tibia, 5.3 mm; metatarsus, 3.0 mm; tarsus, 1.6 mm.

Diagnosis. *Argyrodes schlingeri* males are distinct from males of *A. attenuatus* in lacking the distal angle in the palpal radix, and in having the tubes in the tegulum and median apophysis longer and more tortuous (Fig. 117).

The *A. argyroides* species group

ARGYRODES ARGYRODES (Walckenaer)

Figures 151-153

Linyphia argyroides Walckenaer, 1841, Histoire Naturelle des Insectes Aptères, vol. 2, p. 282. Type locality here designated as Algeria, specimens lost. Vinson, 1863, Aranéides des îles de la Réunion, Maurice et Madagascar, Paris, p. 274.

Linyphia gibbosa Lucas, 1846, Histoire Naturelle des Animaux articulés in Exploration scientifique de l'Algérie, Zool., vol. 1, p. 254. Types from Algeria.

Argyrodes gibbosus, Simon, 1873, Mém. Soc. royal sci. Liège, ser. 2, vol. 5, p. 129. Bonnet, 1955, Bibliographia Araneorum, vol. 2, p. 712.

Argyrodes argyroides, Simon, 1881, Les Arachnides de France, vol. 5, p. 16. F.P.-Cambridge, 1902, Biologia Centrali-Americana, Araneidea, vol. 2, pl. 38, figs. 9, 10. Roewer, 1942, Katalog der Araneae, vol. 1, p. 430.

Note on nomenclature. Although this is the type species of the genus, there has been considerable confusion about the application of the name. Walckenaer, in the original description, mentions Abbot's drawings of Georgia spiders in America, as well as specimens from France. However, Walckenaer states: "L'individu que j'ai décrit se trouvait dans ma collection, dans une bouteille, avec plusieurs Aranéides de France; cependant il serait possible qu'il provint de l'Algérie ou de la Guadeloupe [West Indies]. Dans cette incertitude, la figure d'Abbot ne différant que faiblement de celle-là, je n'ai pas dû les distinguer spécifiquement." Vinson, 1863, as first reviser, interpreted *L. argyroides* as a European or African species, although the type locality was uncertain. This interpretation makes *A. gibbosus* (Lucas) a synonym of *A. argyroides* (Walckenaer), and makes *A. elevatus* Taczanowski the name of the species found in America and first observed by Abbot in Georgia.

Distribution. Southern France (Provence); southern Europe, North Africa, probably all Mediterranean countries.

ARGYRODES ELEVATUS Taczanowski

Figures 128-132; Map 5

Linyphia argyroides Walckenaer, 1841, Histoire Naturelle des Insectes Aptères, vol. 2, p. 282. In part, Abbot's drawings of specimens from Burke County, Georgia.

Argyrodes elevatus Taczanowski, 1872 (1873), Horae Soc. Ent. Rossicae, vol. 9, p. 120, pl. 5, fig. 12. Female holotype from Uassa, French Guiana [Rio Uaçá, Amapa, Brazil], in the Polish Academy of Sciences,

- Warsaw, examined by Exline and Levi. Keyserling, 1884, Die Spinnen Amerikas, Theridiidae, pt. 1, p. 188, pl. 9, fig. 112. Bonnet, 1955, Bibliographia Araneorum, vol. 2, pt. 1, p. 711.
- Argyrodes nephilae*, Keyserling, 1884, *op. cit.*, p. 184, pl. 8, fig. 110. Not *A. nephilae* Taczanowski. (Specimens of Keyserling in very poor condition, thus determination uncertain.)
- Argyrodes concinnus* O.P.-Cambridge, 1880, Proc. Zool. Soc. London, p. 322, pl. 28, fig. 2. Male holotype from the Amazons in the Hope Department of Entomology, Oxford University, examined by Levi.
- Argyrodes jucunda* O.P.-Cambridge, 1880, *op. cit.*, p. 326, pl. 28, fig. 6. Female holotype from Paraná [Brazil], in the Hope Department of Entomology, Oxford University, examined by Levi. Bonnet, 1955, *op. cit.*, p. 714.
- Argyrodes lugens* O.P.-Cambridge, 1880, *op. cit.*, p. 327, pl. 28, fig. 2. Female holotype from the Amazons, in the Hope Department of Entomology, Oxford University.
- Argyrodes piraticum* McCook, 1890, American Spiders, vol. 2, p. 388, *nomen nudum*. California. NEW SYNONYMY.
- Argyrodes decorus* Banks, 1908, Canadian Ent., vol. 40, p. 207. Female holotype from San Pedro, [Los Angeles], California, in the Museum of Comparative Zoology, examined by Levi. NEW SYNONYMY.
- Argyrodes pulcherrima* Mello-Leitão, 1917, Broteria, vol. 15, p. 86, figs. 7, 8. Female type from Manguinhas, Distrito Federal, [Brazil]. NEW SYNONYMY.
- Argyrodes bielavis* Chamberlin, 1924, Proc. U.S. Natl. Mus., vol. 63, art. 13, no. 2481, p. 5, pl. 1, figs. 2-5. Male holotype from Aimesville [? Aimeswell], Louisiana, in the Museum of Comparative Zoology, examined by Levi. NEW SYNONYMY.
- Argyrodes cingulatus* Petrunkevitch, 1925, Trans. Connecticut Acad. Sci., vol. 27, p. 98, figs. 3-5. Female holotype from Panama City, Panama, in the Petrunkevitch personal collection, examined by Exline.
- Argyrodes falcatus* Badoeck, 1932, Jour. Linn. Soc. London, zool., vol. 38, p. 9, figs. 4a-c. Female holotype from Makthlawaiya, Paraguay, lost. NEW SYNONYMY.
- Argyrodes rotundus* Caporiaeco, 1938, Atti Soc. Italiana Sci. Nat., vol. 77, p. 264. Female holotype from Presidio Isl., Lago de Chapala, Jalisco, Mexico, in the collection of the Zoological Institute, Bologna, examined by Levi. NEW SYNONYMY.
- Conopistha elongata* Bryant, 1940, Bull. Mus. Comp. Zool., vol. 86, p. 306, pl. 5, figs. 68, 69, 75, 76. Male holotype from Soledad [Las Villas], Cuba, in the Museum of Comparative Zoology, examined by Levi.
- Conopistha argentinus* Mello-Leitão, 1941, Rev. Mus. La Plata, n.s., vol. 2, p. 143, fig. 39. Male holotype from Mojón, Salta, Argentina, in the Museo de La Plata, examined by Levi. NEW SYNONYMY.
- Conopistha nephilae*, Bryant, 1942, Bull. Mus. Comp. Zool., vol. 89, p. 339, figs. 15, 16. Chamberlin and Ivie, 1944, Bull. Univ. Utah, biol. ser., vol. 8, no. 5, p. 37. Areher, 1946, Paper Alabama Mus. Nat. Hist., no. 22, p. 27, pl. 2, fig. 5. Not *A. nephilae* Taczanowski.

Conopistha argyrodes nephilae, Exline, 1945, Ann. Ent. Soc. America, vol. 38, p. 510, pl. 1, figs. 1-14; pl. 2, figs. 15-17. Kraus, 1955, Abhandl. Senckenbergischen Naturf. Gesell., no. 493, p. 15, figs. 27-29. Not *A. nephilae* Taczanowski.

Rhomphaca simplex Caporiatto, 1954, Comm. Acad. Pontificia Sci., vol. 16, p. 72, fig. 10. Female holotype from Uanary, French Guiana, in the Muséum National d'Histoire Naturelle, Paris, examined by Levi. NEW SYNONYMY.

Conopistha jucunda, Kritscher, 1957, Ann. Naturhist. Mus. Wien, vol. 61, p. 271, fig. 30.

Description. Male from Panama. Carapace, sternum, legs yellow, gray shading on posterior part of carapace and sternum. Abdomen nearly white on sides with silvery flecks, dark gray on venter and on middorsal line and posterior tip. Other males from pale white carapace and legs, to brown or dark gray. Carapace projecting anteriorly, bulbous at end bearing anterior median eyes. Clypeal projection parallel under the cephalic projection, leaving some space between them proximally but touching in middle, bending dorsally at end, slightly longer than cephalic projection (Fig. 128). Total length 4.0 mm. Carapace 2.2 mm long. First femur, 3.3 mm; patella and tibia, 3.6 mm; metatarsus, 2.9 mm; tarsus, 1.3 mm.

Female from Panama. Coloration similar to that of male but more variable. More mature specimens having abdomen with black flecks and oblique stripes of silver, or silver with broad oblique bands of black, or nearly all black. Legs annulate or black. Total length 3.4 mm. Carapace 1.5 mm long. First femur, 2.6 mm; patella and tibia, 2.8 mm; metatarsus, 2.3 mm; tarsus, 1.0 mm.

Variation. Young females are often difficult to separate from *A. nephilae*; they are, however, always larger. Older females have massive abdomens. With increasing maturity there is an increase in pigmentation (Exline, 1945).

While there is little variation in palpal structures of males, there is some variation in the thickness and length of the cephalic projection of the carapace. In some specimens the cephalic projection is slightly elevated, occasionally arched, rarely depressed. The position of the posterior median eyes is variable, sometimes at the base of the projection, sometimes on it.

A male from Baldwin County, Alabama, measured 3.3 mm long, with cephalic projection slightly elevated, arched and nearly as long as the clypeal process. Female, 3.5 mm long, with venter of abdomen pale, has sides partially black with reddish streaks and the rest silvery. Another female, 3.8 mm long,

with abdomen very high and pointed, is entirely silvery. Females from Travis County, Texas, measured from 4.0 to 5.2 mm long, all with silvery abdomens, pointed high above and behind spinnerets; two specimens have sides obliquely streaked with brown. Males from Bahama Islands, 2.7 to 4.3 mm long; females, 2.5 to 4.8 mm long. A majority of the Bahama Island specimens has the sides of abdomens obliquely striped with black; one all black with silvery tip and scattered flecks of silver. Males from Victoria, Tamaulipas 3.6 mm long; females, 3.3 to 4.3 mm long. Males from Galapagos Islands 3.4 to 3.6 mm long; the cephalic projection in one specimen is very slightly depressed, short and thick; a female, 2.6 mm long with high, heavy, black abdomen, has silvery spots. A male from Rio de Janeiro, Brazil, is 3.6 mm long; another, 3.5 mm long, with cephalic projection and clypeal process both shorter than usual. Males from Apa, Paraguay, 3.3 to 4.0 mm long. Two males of this collection have short, thick cephalic projection with almost no opening between it and the clypeal projection; females, 2.5 to 3.7 mm long. Panamanian males measure from 3.4 to 4.0 mm; females, 2.5 to 4.7 mm long.

Diagnosis. The radix of the palpus is long (Fig. 129) with a rugose triangular tip, a large dorsal tooth at right angles to the long axis, and a line or carina running from tip to base. Embolus large, with process bearing distal part of duct well separated from median tooth. Epigynum (Fig. 132) dark, raised, heavily sclerotized, somewhat rugose with fossae widely separated. The area occupied by the seminal receptacles is much narrower than that occupied by fossae. It is assumed that some differences in the genital plate are due to varying ages of individuals, the more sclerotized plates occurring in older specimens.

Natural History. This species is often found in the web of *Nephila* (Alabama, Panama, Haiti, Cuba) and has also been found in the webs of *Argiope argentata* (Fabricius) in California.

Distribution. Southern United States (rare in West), south to Peru and Argentina, Galapagos Islands; Map 5.

Records. United States. Virginia. Fairfax Co.: Falls Church (N. Banks). *North Carolina.* Carteret Co.: Carrot Isl. (R. D. Barnes). Wake Co.: Raleigh (C. S. Brimley). *South Carolina.* Charleston (J. H. Emerton). *Georgia.* Jefferson Co.: Wrens (W. Ivie). *Florida.* Alachua Co.: Gainesville (H. K. Wallace). Marion Co.: (H. K. Wallace). Orange Co.: 7 mi. E of Apopka (Nirenberg). Putnam Co.: Palatka (R. V. Chamberlin). St. Johns Co.: St. Augustine (R. V. Chamberlin). *Alabama.* Baldwin Co.: Lagoon (A. F. Archer); Silverhill (G. Nelson). Houston Co.: Big Creek (A. F. Archer). Mobile Co.: N of Bucks

(A. F. Archer); NE of Theodore (A. F. Archer). Montgomery Co.: Mt. Meigs (A. F. Archer). Tuscaloosa Co.: Tuscaloosa (A. F. Archer). *Mississippi*. Lee Co.: Auburn (N. Banks). Wilkinson Co.: Centreville (A. F. Archer). *Missouri*. Phelps Co.: Rolla (V. Roth, H. E., D. L. Frizzell). *Louisiana*. 4 mi. SE of Natchitoches (T. H. Hubbell). *Texas*. Cameron Co.: Harlingen (D. E. Hardy). Comal Co.: New Braunfels (E. S. Ross). Denton Co.: Lake Dallas (S. E. Jones). Hidalgo Co.: S of Pharr (S. Mulaik); Edinburg (S. Mulaik); Arroyo Colorado (S. Mulaik). Starr Co.: 5 mi. E of Rio Grande City (S. Mulaik). Travis Co.: Onion Creek (H. E. Frizzell); Austin (D. L., H. E. Frizzell). *California*. Los Angeles. Orange Co.: Dana Pt. (W. Ivie). San Diego Co.: mouth of San Diego River. Ventura Co.: SE of Carpinteria (W. J. Gertsch, V. Roth).

Mexico. *Tamaulipas*. Reynosa (W. Green); Soto La Marina; La Victoria (both M. Cazier et al.). *Sinaloa*. 64 km S of Culiacán (W. J. Gertsch). *San Luis Potosí*. Huichihuayán (M. Cazier et al.). *Morelos*. Cocoyoc (W. J. Gertsch, V. Roth). *Veracruz*. (?) Plan del Río (V. Roth, W. J. Gertsch); Fortín (L. I. Davis). *Chiapas*. Tonalá (A. Petrunkevitch). *Campeche*. Lerma (C., M. Goodnight); Campeche (H. Wagner). *El Salvador*. (Kraus, 1955). *Panama Canal Zone*. Barro Colorado Isl. (many coll.); Fort Randolph; Forest Reserve; Porto Bello; Pedro Miguel; Summit, near Cocoli; Arraijan; France Field; Port Sherman (all A. M. Chickering); Gamboa (W. Lundy); Ancón (N. Banks). *Panama*. Old Panama (C. D. Michener); Panama City (C. D. Michener); El Valle (A. M. Chickering); Tobago Isl., Panama Bay. *Bahama Islands*. Long Isl.; Rum Cay (L. Giovannoli); Green Turtle Cay (A. Rabb); Santo Domingo (K. P. Schmidt); Cat Isl. (E. B. Hayden); West Caicos Isl. (Hayden et al.); Great Inagua Isl. (E. B. Hayden); Crooked Isl. (A. W. Scott, Jr.). *Cuba*. San Pedrito, Oriente (A. F. Archer); "Columpo," Isla de Pinos (A. F. Archer). *Jamaica*. Kingston Par.: Palisadors Area (A. M. Chickering). St. Catherine Par.: Hellshire Hills (A. F. Archer). *Haiti*. Gonave Isl. (J. G. Myers); Dame-Marie (A. Audant). Port au Prince (A. F. Archer). Petionville (A. F. Archer). *Dominican Republic*. La Romana (Hassler); Porto Plata (D. Hurst, MNHN); Trujillo Valdez (A. F. Archer). *Mona Isl.* (sev. coll.). *Desecheo Isl.* *Puerto Rico*. Luquillo Mts. (H. Beatty); Mayagüez (A. F. Archer). *Virgin Isl.* St. Croix (Beatty; A. F. Archer); St. Thomas (many coll.); St. Johns (F. E. Lutz); Tortola (A. F. Archer). *Lesser Antilles*. Trinidad (MNIIN); Los Testigos (MNHN).

Venezuela. Dist. Fed.: Caracas (E. Simon, MNIIN). *Aragua*: Tovar (E. Simon, MNHN); Maracay (A. M. Nadler). *Carabobo*: San Estebán (E. Simon, MNIIN). *Ecuador. Napo-Pastaza*: 3-13 km N of Puyo (E. I. Schlinger, E. S. Ross). *Guayas*: S of Manglaralto (E. I. Schlinger, E. S. Ross). *Tungurahua*: Baños (D. L., H. E. Frizzell; W. C. Macintyre). *Galapagos Isl.*: James Isl. (Templeton); Indefatigable Isl.; Floreana. *Peru. Ayacucho*: Ayacucho (W. K. Weyrauch). *Huánuco*: Divisoria, 1700 m elev. (F. Woytkowski). *San Martín*: Sapasoa, Río Huallaga (J. Ortiz de la Puente). *Arequipa*: Atiquipa, 300 m (W. K. Weyrauch). *Lima*: Lachay (P. Aquilar). *Piura*: Pariñas Valley (D. L., H. E. Frizzell); Que. Songora; Chira River (D. L., H. E. Frizzell). *Brazil. Paraíba*: Independencia (W. M. Mann). *Pernambuco*: Recife. *Rio de Janeiro*: Petropolis (H. Sick). *Minas Gerais*: Matozinhos (E. Goumelle, MNHN). *Distrito Federal*: Sumare, from *Nephila* webs, (H. Sick); Santa Teresa (H. Sick); Leblon (H. Sick). *São Paulo*: Cidade de São Paulo (H. Sick). *Paraná*: Cubatao (MNHN). *Paraguay*. (Germain, MNHN); (Kritscher, 1957). *Alto-Parana*: Taguararapa; Apa. *Chaco*: Riacho Negro (E. Reimoser).

ARGYRODES NEPHILAE Taczanowski

Figures 133-137; Map 5

Argyroides nephilae Taczanowski, 1872 (1873), Horae Soc. Ent. Rossicae, vol. 9, p. 114. Male and female syntypes. Male lectotype here designated from Cayenne, French Guiana, in the Polish Academy of Sciences, Warsaw, examined by Exline and Levi. O.P.-Cambridge, 1880, Proc. Zool. Soc. London, p. 324, pl. 28, figs. 4, 4a-f, specimens from the Amazon. Petrunkevitch, 1930, Trans. Connecticut Acad. Sci., vol. 30, p. 179, figs. 19-22.

Argyroides argentata O.P.-Cambridge, 1880, *op. cit.*, p. 325. In part; specimens from the Amazon. Not male lectotype here designated from the East Indies, in the Hope Department of Entomology, Oxford University, examined by Levi (Figs. 148, 149).

Argyroides cambridgei Keyserling, 1891, Die Spinnen Amerikas, Brasilianische Spinnen, p. 215. New name for *A. nephilae* O.P.-Cambridge, 1880, which Keyserling thought distinct from *A. nephilae* Taczanowski. Male lectotype here designated from the Amazon, in the Hope Department of Entomology, Oxford University, examined by Levi. Bonnet, 1955, Bibliographia Araneorum, vol. 2, pt. 1, p. 709.

Argyroides rostratus Banks, 1908, Canadian Ent., vol. 40, p. 207, fig. 9 (upper right). Male holotype from Miami, Florida, in the Museum of Comparative Zoology, examined by Levi. Name preoccupied by *A. rostratus* Blackwall, 1877. NEW SYNONYMY.

?*Argyrodes argentatus*, F.P.-Cambridge, 1902, *Biologia Centrali-Americana*, Araneidea, vol. 2, p. 403, pl. 38, figs. 1, 1a (in part, probably erroneous locality, not female). Bonnet, 1955, *op. cit.*, vol. 2, pt. 1, p. 707 (American references only).

Argyrodes banksi Petrunkevitch, 1911, *Bull. Amer. Mus. Nat. Hist.*, vol. 29, p. 166. New name for *A. rostratus* Banks, preoccupied. Bonnet, 1955, *op. cit.*, vol. 2, pt. 1, p. 709. NEW SYNONYMY.

Conopistha nephilae, Bryant, 1940, *Bull. Mus. Comp. Zool.*, vol. 86, no. 7, p. 308.

Conopistha cambridgei, Bryant, 1942, *ibid.*, vol. 89, no. 7, p. 338, 339, figs. 21, 24.

Note. Cambridge confused several similar species when he described *A. argentata*. Specimens came from the East Indies, Ceylon, Madagascar and the Amazon. All but the East Indian specimens are females, which are difficult to place. A male is here designated as a lectotype from the East Indies (Figs. 148, 149). The females from the Amazon are most likely *A. nephilae* Taczanowski. Keyserling gave the name *A. cambridgei* to O.P.-Cambridge's description, figures and specimens, since he referred to Cambridge and did not redescribe the species or illustrate it. Although Keyserling had an additional specimen from Rio de Janeiro, the lectotype here designated is a male specimen from the Cambridge collection, which was available for study. Keyserling's own specimens from Rio de Janeiro in the British Museum (Natural History) were examined and compared to our figures by Mr. D. Clark who wrote that they are this species.

Description. Male from Florida. Carapace dusky orange-yellow. Sternum light brown. Legs pale almost white, darker at joints. Abdomen solid silver above with a narrow dark median line on dorsum and usually a small black spot at tip; venter and lower part of sides almost black with a pair of round silvery spots in front of spinnerets. Cephalic projection bearing median eyes raised. Clypeal projection slender, extending anteriorly at a slight upward angle beyond head, narrowed in middle and expanded into a knob distally (Fig. 133). Abdomen higher and proportionally heavier than in males of *A. elevatus*. Total length 2.2 mm. Carapace 1.2 mm long. First femur, 1.8 mm; patella and tibia, 1.7 mm; metatarsus, 1.4 mm; tarsus, 0.6 mm.

Female from Florida colored like male. Total length 1.7 mm. Carapace 0.7 mm long. First femur, 1.3 mm; patella and tibia, 1.3 mm; metatarsus, 0.8 mm; tarsus, 0.6 mm. Other females measured 1.7 to 3.1 mm.

Variation. Unlike *A. elevatus*, *A. nephilae* shows little variation. There is some individual variation in color, some specimens

being darker; all, however, are silvery. There is some variation in shape, slant and length of the male clypeal process. The genital plate of females does not appear to accumulate cuticle as the spider ages. Males vary in length from 1.7 to 2.6 mm; females 1.7 to 3.1 mm.

Diagnosis. The small size and silvery, cone-shaped abdomen (Fig. 135) separate specimens of *A. nephilae* from most *A. elevatus*. Young specimens of *A. elevatus*, however, are similar to those of *A. nephilae*. The carapace length of females in the West Indies and southeastern United States, however, does not overlap. The projections of the male carapace are of different shape (Fig. 133) and the radix (Fig. 134) is somewhat different from that of *A. elevatus*. The epigynum is similar to that of *A. elevatus*, but is flatter and the fossae are smaller and rounder (Fig. 137). The area occupied by the seminal receptacles is only slightly narrower than that occupied by the fossae (Fig. 136).

Natural History. Petrunkevitch (1930) found specimens in Puerto Rico in the webs of *Neoscona*, *Nephila* and sometimes *Argiope*, but also "collected specimens in tall grass in a swamp . . . sufficient proof that the species does not necessarily construct its web in the web of large orb-weaving spiders." It has been collected from *Nephila* webs in Haiti and from *Gasteracantha* in Jamaica.

Distribution. Central and southern Florida, West Indies, to eastern South America, Galapagos Islands; Map 5.

Records. United States. Florida. Alachua Co.: Gainesville Nov. 15, 1932 (H. K. Wallace). Broward Co.: Ft. Lauderdale (M. Bates). Charlotte Co.: Murdock (A. F. Archer); Punta Gorda (S. Rounds). Dade Co.: Royal Palm Park (Blatchley); Kendall (A. M. Nadler); Tamiami Trail (F. Phillips); Miami Beach (A. L. Bacon); Miami (J. H. Bacon). Glades Co.: Palm-dale. Highlands Co.: Lake Istokpoga (A. M. Nadler). Indian River Co.: Sebastian (G. Nelson); Vero Beach. Martin Co.: Indian Town (W. J. Gertsch). Monroe Co.: Tavernier (A. M. Nadler). Okcechobee Co.: Okeechobee (W. J. Gertsch). Orange Co.: Winter Park (E. M. Davis); Orlando (M. Nirenberg). Palm Beach Co.: Lake Worth. Putnam Co.: Palatka, June 12, 1935 (W. J. Gertsch). Sarasota Co.: Englewood (W. J. Gertsch); near Sarasota (W. J. Gertsch).

Bermuda. Grasmere. *West Indies. Bahama Isl.:* South Bimini (A. M. Nadler). *Cuba.* Pinar del Río: Pinar del Río. Valles: Soledad (N. Banks). Camagüey: Camagüey (Acosta). Oriente: Puerto de Bonatio (A. F. Archer); Chirivico (A. F. Archer).

Grand Cayman Isl. (R. A. Lewin). *Jamaica*. Manchester Par.: Christiana; Mandeville. St. Andrew Par.: Mona; Kingston. St. Catherine Par.: Bashi Park; Hellshire Hills; Port Henderson; Guanaboa. St. James Par.: near Great River; near Reading; Montego Bay. St. Thomas Par.: Golden Grove; Bawden; near Morant Bay. *Haiti*. Cap Haitien (J. G. Myers); Pétionville (A. F. Archer). *Dominican Republic*. near Ciudad Trujillo (A. M. Nadler); Puerto Plata (D. Hurst). *Puerto Rico*. Mayagüez (A. F. Archer); Aguadilla, Barrio Espinoc (F. Rolle); Ceiba (Serralles); Santuree (A. S. Mills). *Virgin Isl.* St. Croix (H. A. Beatty). *Martinique*. Fond la Haye (A. M. Nadler). *Santa Lucia*. Gastries (J. C. Bradley). *Colombia*. St. Andrew Isl. (H. H. Cleaves). *Venezuela*. *Monagas*: Caripito. *Ecuador*. *Guayas*: La Libertad (E. J. Schlinger, E. S. Ross). *Galapagos Isl.* Indefatigable Isl., 1935, ♀ (W. von Hagen).

ARGYRODES WEYRAUCHI new species

Figures 143-147; Map 5

Type. Male from Río Chotano, 2100 m elev., Dept. Cajamarca, Peru, June 23, 1956 (W. K. Weyrauch), in the Museum of Comparative Zoology. It is named in honor of the collector.

Description. Male carapace brown, orange anterior. Chelicerae, palpi, legs orange-yellow with tarsi darker. Sternum dark brown. Venter of abdomen, tip and longitudinal dorsal stripe nearly black, sides yellowish white with a few silvery flecks. A wide space between cephalic projection and clypeal projection. Posterior median eyes near anterior medians; both pair situated on projection (Fig. 143). Total length 3.8 mm. Carapace 2.0 mm long. First femur, 3.2 mm; patella and tibia, 3.3 mm; metatarsus, 2.5 mm; tarsus, 1.2 mm.

Female collected with male type with carapace darker and more uniform in color than male; legs pale, broadly annulated with brown. Abdomen silvery on sides, banded obliquely with dark gray. Total length 4.3 mm. Carapace 1.6 mm long. First femur, 3.1 mm; patella and tibia, 3.2 mm; metatarsus, 2.5 mm; tarsus, 1.2 mm.

Diagnosis. *Argyrodes weyrauchi* is quite similar to *A. elevatus*, also common in Peru. The two species, however, were not collected together, and *A. weyrauchi* can be separated by the very small radix spur (Fig. 144) and by the large circular fossae, no more than a diameter apart, of the epigynum (Fig. 147).

Natural History. The species has been collected "between leaves of Agave."

Records. Peru. Cajamarca: along Río Chotano, 2 ♂, 8 ♀ paratypes, June 23, 1956 (W. K. Weyrauch).

ARGYRODES PLUTO Banks

Figures 138-142; Map 5

Argyrodes pluto Banks, 1906, Proc. Ent. Soc. Washington, vol. 7, p. 95.

Female holotype from Falls Church, Virginia, in the Museum of Comparative Zoology, examined by Levi. The specific name is a noun in apposition, the ending is therefore unchangeable.

Conopistha ocula Muma, 1944, Amer. Mus. Novitates, no. 1257, p. 5, fig. 7.

Female holotype from Salisbury, Maryland, in the American Museum of Natural History. NEW SYNONYMY.

Description. Male from Missouri with carapace, chelicerae, legs chestnut-brown with black shading. Abdomen black with a pair of silvery flecks near base and a pair of silvery streaks on each side. Cephalic projection extending forward in a nearly straight line with carapace, but quite high; clypeal projection almost vertical in front, tapering to a blunt point (Fig. 138). Abdomen higher and larger than in *A. elevatus* males and not extending as far behind spinnerets. Total length 3.7 mm. Carapace 1.8 mm long. First femur, 3.0 mm; patella and tibia, 3.3 mm; metatarsus, 2.4 mm; tarsus, 1.0 mm.

Female colored like male. Abdomen heavy with a blunt, wide tip, extending high above spinnerets, but not behind it (Fig. 140). Total length 3.9 mm. Carapace 1.8 mm long. First femur, 2.7 mm; patella and tibia, 2.8 mm; metatarsus, 2.0 mm; tarsus, 0.9 mm.

Figure 142 was prepared from the type of *A. pluto*.

Variation. Two females from the Chisos Mts. and one from Durango are paler with abdomen light brown covered with silvery flecks. The female from Chihuahua is similar but with tip of abdomen produced above and behind in a tail-like extension. Most of the Mexican male specimens have the clypeal process conspicuously shorter; in one from Chihuahua it is long and sloping as in *A. elevatus*, but it has the palpus of *A. pluto*. The genital plate of females appears variable in specimens of different ages and some appear flatter than others.

Diagnosis. Even young specimens of *A. pluto* are almost black, like the oldest females of *A. elevatus*. The carapace of the male has a different shape (Fig. 138), and the clypeal process bears regularly arranged rows of short setae. The radix of the palpus is very wide with the lateral spur arising from a swelling (Fig. 139). The embolus, with a short median spur well separated from

anterior, sickle-shaped process having distal part of seminal duct. Epigynum heavily sclerotized, rugose and black, with fossae very large (Fig. 142), separated by less than a diameter and with median rim of each opening extending forward. Seminal receptacles large, wider than long, separated by less than a radius.

Natural History. Usually only single individuals of this species are collected. It has been found in webs of *Latrodectus* (Virginia and Maryland), *Metepeira labyrinthea* (Hentz) (Maryland) and *Argiope aurantia* Lucas (Missouri).

Distribution. From Maryland, Virginia, Missouri, southwest to Chihuahua, and Jamaica; Map 5.

Records. United States. Maryland. Prince Georges Co.: Beltsville (F. R. Smith). *Virginia.* Plummer's Isl. *Missouri.* Phelps Co.: 5 mi. S of Rolla; Rolla (H. E., D. L. Frizzell). *Texas.* Brewster Co.: Chisos Mts. (W. J. Gertsch). Travis Co.: Austin (sev. coll.). *Mexico. Chihuahua:* Matachic; 13, 32 km W of Matachic (W. J. Gertsch); Primavera, 1800-2000 m elev. (W. J. Gertsch); Santa Clara Canyon (W. J. Gertsch). *Durango:* Palos Colorados, 2600 m elev. (W. J. Gertsch); Encina (W. J. Gertsch). *Tamaulipas:* Reynosa (W. Green). *West Indies. Jamaica:* Kingston, Dec. 1950 (A. Zilch, SMF).

The *A. cordillera* species group

ARGYRODES CORDILLERA (Exline), new combination

Figures 155-159; Map 6

Conopistha cordillera Exline, 1945, Ann. Ent. Soc. Amer., vol. 38, p. 516, figs. 20-23. Male holotype from Baños, Tungurahua, Ecuador, in the California Academy of Sciences.

Description. Male. Carapace, sternum brown. Legs yellow. Abdomen black with lateral stripe of silvery spots. Carapace low, with shallow groove under eyes, elypeus only slightly swollen (Fig. 155). Abdomen longer than high, extending beyond spinnerets, without humps, tip with wrinkled cuticle. Total length 3.1 mm. Carapace 1.3 mm long. First femur, 2.2 mm; patella and tibia, 2.2 mm; metatarsus, 1.7 mm; tarsus, 0.9 mm.

Female. Carapace dark gray with yellow shading anteriorly. Sternum dark brown. Legs yellowish brown. Abdomen pale above with white or silvery spots, gray to black on lower sides and venter. Clypeus low and sloping. Abdomen high extending only a little beyond spinnerets, usually with a pair of posterior lateral humps (Fig. 157). Total length 3.6 mm. Carapace 1.3 mm long. First femur, 1.9 mm; patella and tibia, 2.0 mm; metatarsus, 1.2 mm; tarsus, 0.7 mm.

Diagnosis. The male lacks projections or deep grooves on clypeus and eye region (Fig. 155). Palpus slender; embolus a straight, stiff tube; conductor nearly straight but not touching embolus; radix a flattened elongate, transparent plate lying against cymbium, dorsal to other two sclerites (Fig. 156). Epigynum slightly swollen anteriorly, lightly sclerotized; depressed in the central part near genital furrow, with a thin posterior lip and a pair of small openings at each end (Fig. 159). Seminal receptacles large, round, less than their diameter apart; connecting canals short (Fig. 158). *Argyrodes cordillera* is probably related to *A. rossi* and *A. fulvus*. Genital structures and clypeus of male are simpler than in the other two species.

Distribution. Central Ecuador; Map 6.

Records. *Ecuador. Tungurahua:* Baños; Ambato (H. E., D. L. Frizzell). *Azuay:* 17 km E of Paute, Feb. 17, 1955, ♀ (E. I. Schlinger, E. S. Ross).

ARGYRODES ROSSI new species

Figures 160-164; Map 6

Type. Male from 34 km east of Santiago, Nariño, Colombia, March 21, 1955 (E. I. Schlinger and E. S. Ross), in the California Academy of Sciences. The species is named for Dr. E. S. Ross.

Description. Male. Carapace, sternum, palpi dark brown; legs a little lighter. Abdomen almost black, shiny with a small light patch on sides. Carapace broad at eye region. Eyes far apart, equally small, both rows very much recurved if viewed from above. Clypeus with a small projection bearing a conspicuous brush of long stiff setae; a deep but narrow cleft under projection (Fig. 160). Chelicerae unusually long and slightly diverging; fangs long. Abdomen extending far behind spinnerets (Fig. 160). Total length 4.8 mm. Carapace 1.7 mm long. First femur, 2.8 mm; patella and tibia, 3.0 mm; metatarsus, 1.5 mm; tarsus, 0.7 mm.

Female. Carapace, sternum and mouthparts dark brown. Legs orange. Abdomen pale gray with many silvery spots on dorsum. Median eyes closer to laterals than to each other. Clypeus with a groove under anterior median eyes. Chelicerae much shorter than those of male. Abdomen high with small postero-lateral humps and a conspicuous posterior protuberance (Fig. 162). Total length 4.0 mm. Carapace 1.2 mm long. First femur, 2.0 mm; patella and tibia, 2.0 mm; metatarsus, 1.1 mm; tarsus, 0.6 mm.

Diagnosis. The shape of the male elypeus and the structure of the palpus are diagnostic. The palpus has the cymbium long and narrow. The large embolus has a curved basal sclerite, and a long, corkscrew-shaped tip. The conductor is long, enclosing twisted portion of embolus. The radix is long, flat, membranous, lying against cymbium as in *A. trigonum*, but rather inconspicuous (Fig. 161). The epigynum is sclerotized and swollen, with a pair of contiguous, round fossae with a posterior rim (Fig. 164). Internally the seminal receptacles are moderately large and round. Tubes open from lateral sides of depression, make two wide spiral loops to enter receptacles laterally (Fig. 163).

Records. Colombia. Nariño: 34 km E of Santiago, 1 ♀, 2 ♂ paratypes collected with type.

ARGYRODES FULVUS new species

Figures 165-167; Map 6

Type. Female from Rio de Janeiro, Brazil, 1890 (? E. Göldi), in the British Museum (Natural History) (no. 1890.7.1.7910-7911). The specimen had been labeled "*A. americanus* Tacz." The specific name is a Latin adjective meaning brownish yellow.

Description. Carapace, mouthparts, sternum and femora of legs brownish yellow. Distal segments of legs pale yellow with reddish brown annulations. Abdomen brownish yellow with streaks of dull silvery spots and scattered dark spots. Clypeus moderately high, nearly straight with narrow groove under eyes. Anterior median eyes large, separated by less than a diameter, nearer to anterior lateral eyes. Median ocular area nearly square. Sternum very wide in front. Abdomen high, very short, with a pair of low lateral humps and a median posterior hump (Fig. 165). Total length 2.7 mm. Carapace 1.1 mm long. First femur, 1.7 mm; patella and tibia, 1.9 mm; metatarsus, 0.8 mm; tarsus, 0.6 mm.

Diagnosis. Unlike most other species (except *A. rossi* and *A. cordillera*) the fossa of the epigynum has a posterior rim (Fig. 167). The seminal receptacles are large, sclerotized, separated by nearly a radius. The tubes are very long and narrow, of uniform diameter and following a very tortuous path, but not forming definite spirals (Fig. 166).

The *A. cancellatus* species group

ARGYRODES COCHLEAFORMA (Exline), new combination

Figures 178-182; Map 6

Conopistha cochleaforma Exline, 1945, Trans. Connecticut Acad. Sci., vol. 36, p. 178, figs. 1-4. Male holotype from Baños, Tungurahua Prov., Ecuador, in the California Academy of Sciences. The specific name is a noun in apposition, and the ending is therefore unchangeable.

Description. Male. Carapace and legs yellow streaked with gray, sternum mostly gray. Abdomen with gray background, covered with silvery white patches, except for longitudinal dorsal stripe. Clypeus with a long, ventral extension (Fig. 178), both portions of the extension thickly covered with setae. Abdomen with a hump on each side and three posterior dorsal tips which are sometimes absent. Total length 3.7 mm. Carapace 1.6 mm long. First femur, 3.2 mm; patella and tibia, 3.4 mm; metatarsus, 2.3 mm; tarsus, 1.3 mm.

Female. Carapace and sternum dark brown, clypeus yellow. Legs yellow and brown annulated. Abdomen dark gray thickly covered with small silvery white spots; sometimes much lighter, nearly all silvery over a pale gray background. Abdomen very high, not extending behind spinnerets; large lateral humps, almost pointed; a median postero-dorsal protuberance bears three tips as in male (Fig. 180). Total length 2.7 mm. Carapace 1.0 mm long. First femur, 1.9 mm; patella and tibia, 1.9 mm; metatarsus, 1.3 mm; tarsus, 0.7 mm.

Diagnosis. The unique shape of the male clypeus (Fig. 178), and the two prominent teeth of the palpal radix (Fig. 179) separate this species from *A. proboscifer*. The embolus is almost hidden and the conductor very large, occupying the distal part of the palpus. The epigynum of the female has a conspicuous central projection with a round fossa on each side. The connecting canals (Fig. 181) are simple and short.

Natural History. *Argyroides cochleaforma* has been found in considerable numbers in webs of *Gasteracantha* and *Argiope* together with *A. elevatus*; it was not found in the webs of *Leucauge* and *Cyclosa* of the same area (Exline, 1945).

Distribution. Ecuador and northern Peru; Map 6.

Records. (Exline, 1945). *Ecuador. Tungurahua:* near Baños, Feb. 8, 1955 (E. I. Schlinger, E. S. Ross); Baños, July 1938 (W. C. Macintyre).

ARGYRODES SULLANA (Exline), new combination

Figures 183-187; Map 6

Conopistha sullana Exline, 1945, Trans. Connecticut Acad. Sci., vol. 36, p. 181, figs. 9-13. Male holotype from Quebrada Mogollon, Dept. Piura, Peru, in the California Academy of Sciences. The specific name is that of a town in the Chira River Valley, Peru; it is used as a noun in apposition.

Description. Male with carapace and legs yellow, sternum light brown. Abdomen light brown thickly covered on sides and lateral part of dorsum with silvery flecks. Clypeus concave beneath eyes, projecting in front of chelicerae as an upper lip; and from lower edge a longer, thinner, projection extends ventrally (Fig. 183). The opening between the projections is filled with stiff setae. The abdomen is small, high, extending a little behind spinnerets, with a pair of lateral humps. Total length 2.0 mm. Carapace 1.1 mm long. First femur, 2.2 mm; patella and tibia, 2.3 mm; metatarsus, 1.6 mm; tarsus, 0.8 mm.

Female with carapace, sternum and legs mostly yellow with some gray. Abdomen thickly covered with small silvery flecks on light gray background, posterior side a little darker and outlined with a silvery band. Clypeus with deep groove under eyes, sloping forward below. Abdomen moderately high, not extending behind spinnerets; lateral humps prominent, postero-dorsal prominence with three low, sometimes pointed tips; a pair of humps usually present on posterior side above spinnerets (Fig. 185). Total length 2.0 mm. Carapace 1.0 mm long. First femur, 1.7 mm; patella and tibia, 1.8 mm; metatarsus, 1.2 mm; tarsus, 0.6 mm.

Diagnosis. Clypeal process of male (Fig. 183) is diagnostic. Palpal radix longer than in related species, with a deep notch on anterior edge, ending medially in a single long, sharp tooth (Fig. 184); part of anterior edge heavily sclerotized. Embolus partly coiled, hidden behind radix. Conductor more heavily sclerotized than in related species, large, dissected, but not as wide as in *A. cochleaforma*. Epigynum of female raised, lightly sclerotized, with a semicircular fossa on each side having a posterior lip. There is a very small, black, projection in center (Fig. 187). Connecting canals pass posteriorly, then form an indistinct loop before entering the round seminal receptacles (Fig. 186).

Distribution. Northern Peru; Map 6.

Records. Peru. Piura: (Exline, 1945).

ARGYRODES ATOPUS Chamberlin and Ivie

Figures 188-193; Map 6

Argyrodes atopus Chamberlin and Ivie, 1936, Bull. Univ. Utah, biol. ser., vol. 3, no. 5, p. 39, pl. 9, figs. 70-72. Male holotype from Barro Colorado Island, Panama Canal Zone, in the American Museum of Natural History, examined by Exline.

Argyrodes pachysomus Chamberlin and Ivie, 1936, *ibid.*, p. 41, pl. 10, figs. 92-93. Female holotype from Barro Colorado Island, Panama Canal Zone, probably lost, examined by Exline in 1945. NEW SYNONYMY. The synonymy was first recognized by A. M. Chickering.

Description. Male. Carapace dusky gray with clypeus, mouthparts, and legs yellow. Sternum grayish yellow. Abdomen gray on dorsum, sides with a long patch of silver; a bright silver patch behind genital furrow, and a pair of patches above spinnerets; posterior tip usually dark. Carapace broad in front with widely spaced eyes. Anterior median eyes slightly larger than others, separated by nearly a diameter, a little closer to lateral eyes. Carapace illustrated by Figure 188. Abdomen high, extending a little beyond spinnerets; at widest part above spinnerets is a pair of indistinct lateral humps; tip of abdomen blunt or ending in three small humps. Total length 3.4 mm. Carapace 1.6 mm long. First femur, 2.2 mm; patella and tibia, 2.3 mm; metatarsus, 1.4 mm; tarsus, 0.8 mm. Males vary in length from 2.6 to 3.5 mm.

Female smaller and darker than male. Cephalic part of carapace narrower than in male, and eyes closer together. Chelicerae with three teeth on anterior margin, one tooth and three denticles posterior. Abdomen thicker, heavier and shorter than in male, usually with lateral humps (Fig. 190) and sometimes a tripartite posterior hump. The abdomen of gravid females is often shapeless in alcohol. Total length of female 2.4 mm. Carapace 0.8 mm long. First femur, 1.2 mm; patella and tibia, 1.2 mm; metatarsus, 0.7 mm; tarsus, 0.5 mm. Length varies from 1.8 to 2.7 mm.

Variation. Color variation is great, but silvery spots are nearly always present. The shape and humps of the abdomen are variable, especially in females. The slant of the male clypeus and the direction of its dorsal projection show some variation. In females the spacing between the seminal receptacles varies from their radius to over a diameter. The connecting canals follow different paths in different individuals. A male 3.5 mm long and female 2.8 mm long from Mera, Loreto, Peru are paler and covered with silver flecks. The clypeus of the male has the upper projection shorter.

Diagnosis. *Argyrodes atopus* is similar to *A. cochleaforma*, *A. proboscifer* and *A. sullana*. The large U-shaped radix (Fig. 189) distinguishes the males. The swollen female genital plate with its conspicuous black tongue-like projection with indistinct openings (Fig. 193) on each side, separates the female from others except *A. cochleaforma*, in which connecting canals are much less winding.

Distribution. Panama, Venezuela to Ecuador; Map 6.

Records. *Panama Canal Zone.* Barro Colorado Isl. (numerous coll.); Fort Davis, 1936 (A. M. Chickering); Balboa, Aug. 1936 (A. M. Chickering). *Panama.* El Valle, July 1936 (A. M. Chickering). *Venezuela.* [probably northern Venezuela coll. by E. Simon] (MNHN). *Ecuador.* *Napo-Pastaza:* Mera, Feb. 12, 1955, ♀ ♂ (E. I. Schlinger, E. S. Ross).

ARGYRODES PROBOSCIFER (Exline), new combination

Figures 194-198; Map 6

Conopistha proboscifera Exline, 1945, Trans. Connecticut Acad. Sci., vol. 36, p. 184, figs. 5-8. Male holotype from near Mera, Napo-Pastaza, Ecuador, in the California Academy of Sciences.

Description. Male. Carapace, sternum dark brown. Legs yellowish brown. Abdomen blackish with a longitudinal light stripe covered by large silvery areas and a few silvery spots on posterior and venter. Carapace low with a ventral clypeal projection, having a dorsal excavation near its tip (Fig. 194). Stiff setae fill the hollow. Abdomen elongated far behind and sometimes above spinnerets with a pair of postero-lateral humps, posterior tip blunt. Total length 2.9 mm. Carapace 1.3 mm long. First femur, 1.7 mm; patella and tibia, 1.9 mm; metatarsus, 1.2 mm; tarsus, 0.7 mm.

Female. Carapace and legs brownish yellow. Abdomen dark brown to black with most of sides pale with silvery spots. Abdomen much higher than that of male, extended behind and above spinnerets with postero-lateral humps more conspicuous (Fig. 196). Total length 2.6 mm. Carapace 0.8 mm long. First femur, 1.1 mm; patella and tibia, 1.2 mm; metatarsus, 0.6 mm; tarsus, 0.5 mm.

Diagnosis. The different shape of the male clypeus (Fig. 194) and abdomen separate this species from *A. cochleaforma*. The radix has an anterior heavily sclerotized truncate extension bearing three teeth in a line, the distal one being the longest. The embolus is heavy, stiff and curved. The conductor is large, mostly

membranous divided distally into two nearly equal leaf-like apophyses (Fig. 195). Epigynum (Fig. 198) large and not sclerotized, with a small very dark central protruding lip having an opening on each side. The connecting canals are very long and irregularly coiled (Fig. 197).

Natural History. The spiders were collected from *Gasteracantha* webs.

Distribution. Ecuador and northern Peru; Map 6.

Records. *Ecuador.* (Exline, 1945). *Peru.* *Junín:* near Utcuyac, Feb. 1948 (F. Woytkowski).

ARGYRODES ECAUDATUS (Keyserling), new combination

Figures 170-172; Map 6

Faiditus ecaudatus Keyserling, 1884, Die Spinnen Amerikas, Theridiidae, pt. 1, p. 160, pl. 7, fig. 99. Female type from Uassa [Uaçá, Amapa, Brazil], in the Polish Academy of Sciences, Warsaw, examined by Levi.

Figures 170-172 were prepared from the type specimen; no other specimens were available.

ARGYRODES ARTHURI new species

Figures 199-205; Map 7

Type. Male from Barro Colorado Island, Panama Canal Zone, Aug. 1939 (A. M. Chickering), in the Museum of Comparative Zoology. This species is named for Dr. Chickering.

Description. Male. Carapace and palpal tarsus dark brown; legs, mouthparts and sternum yellowish brown. Abdomen dark brown anteriorly on dorsum, tan with black patches and a solid black posterior tip; silvery spots and patches on sides. Eyes small with anterior median eyes larger than others and protruding from anterior edge of cephalic projection (Fig. 199). Posterior median eyes separated by more than a diameter, quite distant from laterals. Clypeus with deep median cleft behind groove. Chelicerae short with a short fang, three or four teeth on anterior margin and one tooth posterior. Abdomen cylindrical, tapering to a blunt tip; tip in a few specimens divided into a median upper and a pair of lower tubercles. Anterior part of dorsum with scutum. Total length 4.5 mm. Carapace 1.7 mm long. First femur, 3.1 mm; patella and tibia, 3.1 mm; metatarsus, 2.3 mm; tarsus, 1.0 mm. Males vary in length from 4.0 to 5.0 mm.

Female. Coloration as in male, except silvery patches on abdomen are larger and more numerous. Eyes closer together than in

male. Clypeus low, somewhat sloping and with wide, shallow groove under eyes. Abdomen shaped and patterned as in male, but without seutum (Fig. 201). There are slight lateral humps in gravid females. Total length 4.2 mm. Carapace 1.3 mm long. First femur, 2.3 mm; patella and tibia, 2.2 mm; metatarsus, 1.7 mm; tarsus, 0.8 mm. Females vary from 3.0 to 4.6 mm in length.

Diagnosis. *Argyrodes arthuri* is similar to *A. gertschi*. The carapace of the male (Fig. 199) has the anterior median eyes on the cephalic projection and the clypeus bulging below, leaving a large excavation between. The palpus (Fig. 200) has the tegulum shorter than usual. The basal coil of embolus is supported by the radix, the end by the saber-like arm of the conductor. The radix of *A. gertschi* is split almost to the base; the radix of *A. arthuri* is divided into two parts, a median sclerite and a mesal sclerite. The palpal femur is short with a mesal, blunt apophysis; the patella is curved. The epigynum (Figs. 203-205) has the central area swollen with a median posterior depression. The anterior half of the depression is covered by a hood that is incomplete or broken in many specimens (Figs. 203, 204). The internal genitalia (Fig. 202) are white and not sclerotized. There is a short blind sac anterior to the entrance of the duct into the anterior end of the seminal receptacles.

Distribution. Only known from Panama Canal Zone; Map 7.

Records. *Panama Canal Zone.* Barro Colorado Isl., June, July, Aug. 1939; July 1954, ♀ ♂ paratypes; Forest Reserve, July 1954 (all A. M. Chickering).

ARGYRODES GERTSCHII new species

Figures 206-211; Map 7

Type. Male from El Volcán, 1600 m elev., Chiriquí, Panama, Feb. 21, 1936 (W. J. Gertsch), in the American Museum of Natural History. This species is named after Dr. W. J. Gertsch.

Description. Male. Carapace, sternum, tarsus of palpus, mouthparts and base of abdomen reddish brown. Legs yellow. Most of abdomen pale gray, thickly covered with large silvery patches. Carapace rounded in front. Eyes nearly equal in size. Anterior median eyes their diameter apart, slightly more than their diameter from laterals. Posterior median eyes two diameters apart. Clypeus sloping forward and partially divided under the deep groove (Fig. 206). Clypeus narrows above chelicerae to a blunt point. Chelicerae and legs short. Abdomen extended far behind spinnerets, tapering to blunt wrinkled tip. Proximal end

of abdomen with a large dorsal sclerotized shield. Total length 4.3 mm. Carapace 1.5 mm long. First femur, 2.1 mm; patella and tibia, 2.3 mm; metatarsus, 1.6 mm; tarsus, 0.7 mm.

Female. Paler than male, mostly pale yellow with carapace infused with gray. Clypeus low, slightly slanting, and divided by shallow groove. Abdomen without scutum, elongate as in male, but extending behind spinnerets, with a low pair of lateral humps; posterior tip divided into one upper and two lower points (Fig. 208). Total length 3.5 mm. Carapace 1.1 mm long. First femur, 1.5 mm; patella and tibia, 1.6 mm; metatarsus, 1.0 mm; tarsus, 0.6 mm. A second specimen, total length, 2.9 mm; a third damaged, but about 4.5 mm long.

Diagnosis. *Argyrodes gertschi* is similar to *A. arthuri*, but can be distinguished by the shape of the male clypeus (Fig. 206). The radix of the palpus of *A. gertschi* is split longitudinally nearly to its base, that of *A. arthuri* is split into two sclerites. The small, heavy embolus is only partially coiled (Fig. 207). The epigynum is similar to that of *A. atopus*, with a pointed beak and openings immediately posterior (Figs. 210-211). Internal structure is as in *A. arthuri*, with a pair of very large, pale but well sclerotized, contiguous seminal receptacles. The tubes enter anteriorly and lie medially and ventrally to the receptacles (Fig. 209).

Distribution. Only known from northern Panama; Map 7.

Records. Panama. Chiriquí: El Volcán, 1600 m elev., ♂ 3 ♀ paratypes collected with type.

ARGYRODES ALTUS Keyserling

Figures 212-216; Map 7

Argyrodes altus Keyserling, 1891, Die Spinnen Amerikas, Brasilianische Spinnen, p. 211, pl. 8, fig. 152. Female type from Espírito Santo, Brazil, in the British Museum (Natural History), examined by Levi. Göldi, 1892, Mitt. Oesterlande, neue Folge, vol. 5, p. 224, 228.

Conopistha pozonae Schenkel, 1953, Verhandl. Naturf. Gesell. Basel, vol. 64, no. 1, p. 11. Female type from El Pozon, Dto. Acosta, Prov. Falcon, Venezuela, in the Naturhistorisches Museum, Basel, examined by Levi.
NEW SYNONYMY.

Description. Male from Venezuela. Carapace, sternum, distal segments of legs and tarsi of palpi orange-brown infused with gray. Clypeus, mouthparts, femora of legs and proximal segments of palpi clear yellowish orange. Abdomen light brown with a black patch on basal part of dorsum, and entire tip black infused with brown. A patch of silvery spots on each side near

base, another across center part of dorsum, and an oblique line on posterior lateral margin. Carapace slender. Clypeus very high, slanting forward beneath eyes to closed groove; swollen and projecting below and hanging over base of chelicerae (Fig. 212). Anterior median eyes a little larger than others, less than a diameter apart, about same diameter from posterior medians and farther from laterals. Ocular area wider behind than in front. Abdomen extending far behind spinnerets, somewhat enlarged at posterior end and bluntly rounded with a trace of paired lateral humps. Cuticle of posterior part of abdomen wrinkled. Total length 3.1 mm. Carapace 1.4 mm long. First femur, 2.1 mm; patella and tibia, 2.3 mm; metatarsus, 1.6 mm; tarsus, 0.6 mm.

Female from Venezuela. Paler than male; carapace orange-yellow infused with gray; sternum and proximal part of femora pale yellow; distal segments of legs grayish orange. Abdomen with dorsum with broad, longitudinal, light brown band. Sides, posterior, and venter thickly covered with silvery flecks. A brown band including some dark gray on each side above spinnerets and a gray streak along each lateral posterior margin. Carapace shorter and broader than in male. Clypeus sloping forward, rounded, without groove. Eyes similar to those of male. Abdomen slender, extended above rather than behind spinnerets, distal end blunt, with a trace of lateral humps as in male (Fig. 214). Cuticle of posterior side wrinkled. Total length 2.2 mm. Carapace 1.0 mm long. First femur, 1.6 mm; patella and tibia, 1.5 mm; metatarsus, 0.7 mm; tarsus, 0.5 mm.

Diagnosis. The male *A. altus* can be distinguished from most species by the high, bulging clypeus (Fig. 212), similar to that of *A. amplifrons*, and from the latter by the small, heavily sclerotized, crescent-shaped palpal radix (Fig. 213). The conductor lies within the tip of the cymbium; a posterior projection of the conductor interlocks with the radix. The embolus forms a small heavy spiral, not visible in ventral view, hidden behind radix and projection of conductor. The epigynum is very large, central area concave with sclerotized wall. Openings large, anterior to a pair of oblique median ridges (Fig. 216). Tubes are unusually wide with membranous walls, nearly encircling the seminal receptacles, narrowing toward receptacles. Receptacles separated by a radius, heavily sclerotized (Fig. 215). No other species has a similar epigynum.

Natural History. Göldi (1892), who collected this species for Keyserling, reports finding the spider in virgin tropical forest

within several days' trip from São Eduardo [Santo Eduardo] on the Rio Itabapoana, the border river between the provinces Rio de Janeiro and Espírito Santo.

Distribution. Venezuela to southern Brazil; Map 7.

Records. Venezuela. (Carabobo): San Estebán, Jan., Feb. 1888, ♀ ♂ (E. Simon, MNHN).

ARGYRODES AMPLIFRONS O.P.-Cambridge

Figures 217-224; Map 7

Argyroides obtusa O.P.-Cambridge, 1880, Proc. Zool. Soc. London, p. 338, pl. 30, fig. 17. Male holotype from the Amazons, [Brazil], in the Hope Department of Entomology, Oxford University, examined by Levi. Simon, 1894, Histoire Naturelle des Araignées, vol. 1, p. 496, fig. 505. NEW SYNONYMY.

Argyroides amplifrons O.P.-Cambridge, 1880, *ibid.*, p. 339, pl. 30, fig. 17. Male and female syntypes from the Amazons, [Brazil], in the Hope Department of Entomology, Oxford University, examined by Levi. Keyserling, 1884, Die Spinnen Amerikas, Theridiidae, pt. 1, p. 186, pl. 9, fig. 111; 1891, *op. cit.*, Brasilianische Spinnen, p. 214, pl. 8, fig. 156. Simon, 1894, *op. cit.*, p. 499.

Conopistha pizai Soares and Camargo, 1948, Bol. Mus. Paraense, vol. 10, p. 364, fig. 14, ♂. ? Juv. male type from Chavantina, Mato Grosso, Brazil, in the Departamento de Zoologia Secretaria da Agricultura do Estado de São Paulo. NEW SYNONYMY.

Note. Because specimens belonging to this species have been correctly named *A. amplifrons*, and the name *A. obtusus* has been incorrectly used for several other species, we prefer to use the name *A. amplifrons* even though *A. obtusus* has page priority. *Argyroides obtusus* of F.P.-Cambridge 1902 is *A. subdulus*; *A. obtusus* of Petrunkevitch 1930 is *A. exiguus*. Specimens of several species from the West Indies, Guatemala, and Mexico have been erroneously identified as *A. obtusus* in collections.

Description. Male from San Martín, Peru. Carapace and legs chestnut brown, sternum and tarsi of palpi darker. Abdomen brown with large pale patches, flecked with silver. Carapace flat, broad and rounded in front. Anterior median eyes slightly protruding over clypeus. Clypeus with cleft near anterior median eyes; below cleft a large, divided bulge overhangs chelicerae (Fig. 217). Palpi very short with large tarsi. Base of abdomen with large sclerotized area. Abdomen extending far behind and above spinnerets, tapering posteriorly, with tip distinctly bifid. Total length 4.6 mm. Carapace 1.6 mm long. First femur, 3.3 mm; patella and tibia, 3.3 mm; metatarsus, 2.3 mm; tarsus, 1.0 mm.

Female from Huánuco, Peru. Carapace and legs yellow with gray infusions, sternum pale yellow. Abdomen white covered with silvery patches, with a broad gray longitudinal band on dorsum. Abdomen very high above spinnerets, and extending only a little behind them, blunt and bifid (Fig. 221). Total length 2.3 mm. Carapace 0.9 mm long.

Figures 217, 218, 221, 222, 224 were prepared from the syntypes of *A. amplifrons*.

Variation. Color, shape of abdomen, and length of male clypeal protrusion vary within populations. There is considerable variation in shape of genitalia (Figs. 218-220, 222, 223) between different populations. A male from Paraguay, 3.0 mm long, has carapace, legs and sternum yellow with gray infusions. Abdomen very pale yellow, flecked with silver and gray infusions ventrally. Abdomen low, with a suggestion of lateral humps near tip; tip very blunt, not bifid but with cuticle wrinkled in a pair of concentric circles. A male 3.7 mm long, much as above, but carapace, legs and sternum orange.

Males from Panama range from 2.7 to 3.3 mm total length. Cephalothorax pale yellow to dark brown, abdomen varies from almost white with dark gray to dark gray or brown. None has the tip of the abdomen bifid or trifid. The palpal radix is more concave anteriorly, and has a mesal tooth; the conductor is slightly different in shape (Fig. 220). Two females collected in Panama measure 2.8 mm and 3.0 mm long. Both are very pale, with the abdomen silver flecked, high, and bifid at tip. The epigyna are more transparent, and the median ridge more distinct. The connecting canals of all females examined appear to be larger in diameter than in the female type (Fig. 222), and the seminal receptacles are smaller (Fig. 223).

Diagnosis. The bulbous clypeus (Fig. 217) is diagnostic in the male; *A. altus* also has a swollen clypeus but differs in shape of the palpal radix (Figs. 218-220). Bulb of palpus with parts tightly fitting; tegulum with two distinct concentric loops of duct; median apophysis large showing duct; subtegulum with large tooth extending over median apophysis on mesal side (not visible in figures); radix short, wide, narrowing to ectally directed point; embolus heavy, hidden, forming small coil firmly supported by radix and visible only through it; conductor large, sclerotized, dissected, supporting embolus, with a large, distally attached apophysis that lies ventrally and bisects tip of bulb, almost reaching radix posteriorly (Figs. 218-220). The female differs from other species by being pale, with abdomen bifid at

tip, and by having epigynum large, poorly sclerotized. Epigynum with a pair of uniquely wide, curved ridges uniting medially in a scape with openings inside posterior ends of ridges (Fig. 224). Connecting canals large, forming two large loops, then narrowing to enter seminal receptacles. Seminal receptacles are anterior to ridge (Figs. 222, 223).

Distribution. Rare in Panama, to Paraguay, most collections from interior of South America; Map 7.

Records. *Panama Canal Zone.* Barro Colorado Isl., ♀ ♂ (A. M. Chickering); ♂ (T. C. Schneirla). *Peru. Loreto:* (Keyserling, 1884); Pebas, ♀ (M. de Mathan, MNHN). *San Martín:* 20 km NE of Moyobamba, 1600 m elev., 2 ♂ (F. Woytkowski). *Huánuco:* Divisoria, ♀ (F. Woytkowski). *Brazil. Pará:* Santarém (BMNH). *Rio de Janeiro:* (Keyserling, 1891). *Santa Catarina:* Nova Teutonia, ♀ ♂ (F. Plaumann, SMF). *Paraguay.* Apa, ♂. *Bolivia. Cochabamba:* Esperíto Santo (MNHN).

ARGYRODES ACUMINATUS Keyserling

Figures 225-230; Map 7

Argyroides acuminatus Keyserling, 1891, Die Spinnen Amerikas, Brasilianische Spinnen, p. 207, pl. 7, fig. 149. Male, female syntypes from Serra Vermella [Serra Vermelha, right bank of Río Paraíba, probably near São Fidélis, Rio de Janeiro], Miracena [Minas Gerais], Fazenda Calvario [near São Fidélis, left bank of Río Paraíba, Rio de Janeiro], Espírito Santo, Brazil, in the British Museum (Natural History), examined by Levi. Göldi, 1892, Mitt. Osterlande, neue Folge, vol. 5, p. 224.

Göldi collected this species in several localities, all from virgin forests in hot lowlands; no additional specimens were available. The illustrations were prepared from the syntypes.

ARGYRODES EXIGUUS new species

Figures 231-235; Map 7

Argyroides obtusus, Petrunkevitch, 1930, Trans. Connecticut Acad. Sci., vol. 30, p. 186, figs. 29-32. Not *A. obtusus* O.P.-Cambridge.

Type. Male from Collazo, east of San Sebastián, Puerto Rico, July 30, 1958 (A. F. Archer), in the American Museum of Natural History. The specific name is an adjective meaning small.

Remarks. Petrunkevitch's figures show the carapace, and the palpus from a lateral angle, seemingly cleared, and perhaps without radix. His specimen was examined by Exline; it is not well pigmented and is a little smaller than others.

Description. Male type. Carapace, sternum and legs dusky yellow, streaked. Mouthparts and proximal parts of legs yellow. Abdomen yellow; dorsum at base and entire posterior third black; two pairs of irregular silvery stripes on sides, three pairs of small silver spots on posterior; venter reddish without silver. Anterior median eyes slightly larger than others, not quite a diameter apart, a little farther from laterals. Posterior median eyes separated by two diameters, closer to laterals. Clypeus high, with closed groove below eyes, notched and swollen below groove, almost straight below swelling to edge (Fig. 231). Legs slender; sternum wide in front. Abdomen elevated far above spinnerets and blunt tip extending posteriorly beyond them. A pair of very low lateral humps above spinnerets. Total length 2.6 mm. Carapace 1.0 mm long. First femur, 1.3 mm; patella and tibia, 1.6 mm; metatarsus, 1.6 mm; tarsus, 0.7 mm.

Female from Cuba. Carapace dusky yellow. Mouthparts yellow with gray markings. Sternum gray. Legs pale yellow annulated and streaked with reddish brown and gray. Abdomen dark gray with a pair of silvery spots at base of dorsum, two pairs of large silvery spots and one very small pair posterior; a cluster of silvery spots on each lateral hump, on venter, and a few scattered on dorsum. Carapace short and wide. Clypeus only moderately high with groove under eyes. Anterior median eyes slightly larger than others, separated by about a diameter. Median ocular area square, close to lateral eyes. Sternum unusually wide in front. Abdomen projecting above and a little beyond spinnerets, with a low hump above spinnerets and a blunt posterior dorsal hump (Fig. 233). Total length 2.2 mm. Carapace 0.8 mm long. First femur, 0.9 mm; patella and tibia, 1.1 mm; metatarsus, 0.6 mm; tarsus, 0.5 mm.

Diagnosis. The form of the male clypeus (Fig. 231) separates this from males of other West Indian species. The palpal radix is diagnostic, large and high, with a large spur in center of anterior edge. The embolus is thick, forming a wide spiral. The conductor is large with a tooth extending slightly beyond cymbium (Fig. 232). The epigynum of the female has a wide, fairly long fossa, an anterior cuticular rim, with central thickened lip, continuous around lateral margins. A conspicuous brown spot marks the center of each side of fossa (Fig. 235). The seminal receptacles are small. Large tubes diminishing in diameter from openings to receptacles follow an S-shaped path (Fig. 234). Males and females have not been collected together and it is therefore not certain that they belong together.

Distribution. Cuba, Puerto Rico; Map 7.

Records. Cuba. Pinar del Río: N of Vinales, Sept. 16-22, 1913, ♀. Puerto Rico. Martín Peña, Nov. 7, 1925, ♂ (A. Petrunkevitch); Estación Experimental, Mayagüez, Aug. 1958, ♂ (A. F. Archer).

ARGYRODES PLAUMANNI new species

Figures 168, 169; Map 9

Type. Male from Nova Teutonia, lat 27°11', long 52°23', Santa Catarina, Brazil, 1930-1940 (F. Plaumann), in the Senckenberg Museum, Frankfurt. The species is named for the collector.

Description. Carapace brown paling to brownish yellow in eye region and on clypeus. Tarsi of palpi, sternum and mouthparts brown. Legs dusky orange. Abdomen with brown sclerotized basal area on dorsum and venter anterior to genital groove, otherwise grayish white covered with dull silvery flecks. Carapace short, wide and high, sloping gradually from posterior to eyes. Eye region flattened with anterior median eyes borne on pointed projection. Clypeus high, with wide, open groove separating cephalic projection from long, thumb-like clypeal projection; clypeus sloping slightly forward below (Fig. 168). Eyes small, anterior medians largest, separated by a diameter, and about a diameter and a half from posterior medians, much farther from anterior laterals. Posterior eyes equally spaced, about four diameters apart. Abdomen extending far behind spinnerets with a pair of dorso-lateral humps midway between spinnerets and posterior bifurcate tip (Fig. 168). Total length 4.5 mm. Carapace 1.6 mm long. First femur, 2.7 mm; other segments missing.

Diagnosis. Shape of clypeus and cephalic region (Fig. 168) is diagnostic and similar to that of *A. argyroides* group. The palpal structure and shape of the abdomen relate it to *A. cancellatus*. Palpus wide; radix large with transverse anterior margin ending in sharp ventrally bent tooth. Embolus narrow, forming wide spiral, seen only through radix. Conductor conspicuous with rounded basal portion, bearing a pair of scissor-like blades that protrude beyond cymbium (Fig. 169). The female is unknown.

ARGYRODES WOYTKOWSKII new species

Figures 173-177; Map 9

Type. Male from Utcuyacu, Junín, Peru, 1600-2200 m elev., March 1948 (F. Woytkowski), in the American Museum of Natural History. The species is named for the collector, who has

contributed greatly in exploring the flora and fauna of Peru.

Description. Male. Carapace and chelicerae brown. Sternum, labium and palpal tarsi almost black. Legs brownish yellow. Abdomen black infused with yellow anteriorly, with a wide saddle of pale yellow flecked with silvery spots in posterior half. A pair of silvery spots behind and above spinnerets, and three silvery spots at posterior extremity. Another male is slightly lighter. Cephalic part of carapace elevated gradually from thoracic groove. Clypeus high, sloping forward beneath anterior median eyes to a deep groove containing a brush of stiff setae; ventral part bulging (Fig. 173). Anterior median eyes large, separated by only slightly more than a radius. Posterior median eyes smaller, separated by two diameters. Abdomen bluntly rounded behind spinnerets. The cuticle of the posterior tip somewhat wrinkled. Total length 2.6 mm. Carapace 1.2 mm long. First femur, 2.5 mm; patella and tibia, 2.7 mm; metatarsus, 1.9 mm; tarsus, 1.1 mm.

Female. Carapace and chelicerae brownish yellow infused with dark gray. Legs bright yellow. Sternum dark gray. Abdomen as in male with pale saddle larger and covering more of sides, and a pair of silvery spots in front of spinnerets as well as the pair behind. Posterior side mostly pale. Cephalic part of carapace not elevated as in male. Clypeus moderately high with deep groove under eyes, somewhat bulging and sloping. Eyes as in male. Abdomen with very slight posterior hump (Fig. 175). Total length 2.0 mm. Carapace 0.8 mm long. First femur, 1.3 mm; patella and tibia, 1.4 mm; metatarsus, 0.7 mm; tarsus, 0.6 mm.

Diagnosis. *Argyrodes woytkowskii* has a narrow radix, projecting on venter with a long spine, and two distal teeth (Fig. 174); it does not support the embolus. The short, heavy embolus forms a semicircle. The conductor lies entirely within the cymbium of the bulb. The epigynum is very wide and has round openings at lateral ends of a wide, sclerotized groove (Fig. 177). From the openings the tubes pass toward the median line, fold back in an arched curve to enter the seminal receptacles. Receptacles separated by a radius (Fig. 176).

Records. Peru. Junín: Uteuyacu, 1600-2000 m elev., Feb. 8-26, 1948, 1 ♀, 1 ♂ paratypes (F. Woytkowski).

ARGYRODES AMERICANUS (Taczanowski)

Figures 236-247; Map 8

- Ero americana* Taczanowski, 1872 (1873), Horae Soc. Ent. Rossicae, vol. 10, p. 62. Female lectotype here designated from Uassa, French Guiana [Rio Uaçá, Amapa, Brazil], in the Polish Academy of Sciences, Warsaw, examined by Levi.
- Argyrodes trituberculatus* Becker, 1879, Ann. Soc. Ent. Belgique, vol. 22, p. 79, pl. 1, figs. 1-3. Male type from Pascagoula, Mississippi, in the Institut Royal des Sciences Naturelles de Belgique, Brussels, examined by Levi. Keyserling, 1884, Die Spinnen Amerikas, Theridiidae, pt. 1, p. 203, pl. 10, fig. 122. Simon, 1894, Histoire Naturelle des Araignées, vol. 1, p. 499. NEW SYNONYMY.
- Argyrodes americanus*, Keyserling, 1884, Die Spinnen Amerikas, *op. cit.*, Theridiidae, pt. 1, p. 195, pl. 9, fig. 117; 1891, *op. cit.*, Brasilianische Spinnen, p. 215. F.P.-Cambridge, 1902, Biologia Centrali-Americana, Araneidea, vol. 2, p. 403, pl. 38, figs. 4, 5. Petrunkevitch, 1930, Trans. Connecticut Acad. Sci., vol. 30, p. 185, figs. 27, 28. Bryant, 1940, Bull. Mus. Comp. Zool., vol. 86, no. 7, p. 306. Bonnet, 1955, Bibliographia Araneorum, vol. 2, pt. 1, p. 706.
- Argyrodes ululabilis* Keyserling, 1891, *op. cit.*, Brasilianische Spinnen, p. 212, pl. 8, fig. 153. Female type from Taquara do Mundo Nova, Rio Grande do Sul, Brazil, in the British Museum (Natural History), examined by Levi. NEW SYNONYMY.
- Argyrodes argenteola* O.P.-Cambridge, 1894, Biologia Centrali-Americana, Araneidea, vol. 1, p. 128, pl. 16, fig. 4. Male type from Teapa, Tabasco, [Mexico], in the British Museum (Natural History), examined by Levi. Bonnet, 1955, *op. cit.*, p. 707.
- Argyrodes aurea* O.P.-Cambridge, 1896, *op. cit.*, p. 207, pl. 26, fig. 1; 1898, p. 259, pl. 38, fig. 4. Female type from Teapa, Tabasco, [Mexico], in the British Museum (Natural History), examined by Levi.
- Argyrodes parvior* Chamberlin and Ivie, 1936, Bull. Univ. Utah, biol. ser., vol. 3, no. 5, p. 37, pl. 9, figs. 68, 69. Male type from Panama Canal Zone, in the American Museum of Natural History, examined by Exline. (Not female, pl. 10, figs. 85-87 = *A. caudatus*.) NEW SYNONYMY.
- Argyrodes indignus* Chamberlin and Ivie, 1936, *ibid.*, p. 38, pl. 10, figs. 94, 95. Female type from Panama Canal Zone, lost. NEW SYNONYMY.
- Description.* Male from Panama. Carapace and mouthparts brownish yellow. Legs brownish orange with proximal parts of femora yellow. Sternum orange-brown. Abdomen gray with basal part and spinnerets brown, dark gray in patches on humps, and with scattered bright silver spots or patches. A pair of round silver spots above spinnerets, none on venter. Carapace with cephalic part low. Clypeus low with closed groove under eyes, nearly straight, slightly projecting ventrally in midline (Fig. 242). Anterior median eyes larger than others, separated by

about a diameter, farther from laterals. Posterior median eyes nearer posterior laterals than each other. Abdomen highest and widest above spinnerets with a pair of lateral humps; posterior part rounded, extending beyond spinnerets with a median posterior hump (Fig. 243). Total length 3.5 mm. Carapace 1.6 mm long. First femur, 3.4 mm; patella and tibia, 3.3 mm; metatarsus, 1.9 mm; tarsus, 0.8 mm.

Female. Carapace, mouthparts and distal parts of femora, tibiae and tarsi yellowish brown. Proximal parts of femora, patellae and metatarsi yellow. Abdomen mostly mottled silver with dark gray patch anterior and streaks of dark gray medially on dorsum and on posterior side. Spinnerets and venter anterior to genital groove brown. A pair of round silver patches above spinnerets, as in male. Carapace similar to that of male with elypeus nearly as high. Eyes as in male except medians nearer laterals. Dorsum of abdomen with lateral humps above spinnerets more conspicuous than in male; the single low posterior hump as in male (Fig. 244). Two silver spots above spinnerets are often borne on small raised protuberances. Total length 2.9 mm. Carapace 1.2 mm long. First femur, 1.8 mm; patella and tibia, 1.8 mm; metatarsus, 0.9 mm; tarsus, 0.5 mm.

Variation. Panamanian males vary from 2.3 mm in length to 3.5 mm; females from 2.0 to 3.2 mm. Specimens from other regions are within this size range, those from Florida and the West Indies usually being small, and those from southern Mexico, Costa Rica and Brazil usually large. The female abdomen varies greatly in width (from 1.0 to 3.5 mm) becoming much wider as the ovaries develop. The male abdomen is not as variable, but the humps of some males are reduced, and old specimens appear to lose the humps and the posterior part of the abdomen becomes low and blunt.

Color and pattern are variable in any series of specimens, even from one locality. Specimens with carapace and legs pale yellow and abdomen mostly silver are found in association with dark specimens (carapace and legs brown, abdomen nearly black with bright lateral silver patches). When the female abdomen is very wide and high, the color is usually pale, thickly mottled with tiny silver spots.

The genitalia are not as variable as in most widespread species, but a difference in the amount of sclerotization of parts of the male palpus changes the appearance somewhat. The radix is often quite transparent, and sometimes dark and well outlined. The conductor appears entirely fleshy and almost formless in some palpi, and in others shows some sclerotization (Figs. 236-241).

The seminal receptacles are oval to almost spherical (Figs. 245, 246). South American females usually seem to have the ducts longer.

Figures 240, 241 were prepared from the type of *A. trituberculatus*.

Diagnosis. Many individuals can be separated from *A. globosus* by the posterior median hump on the abdomen, but this is sometimes absent. Others can be separated by the epigynum (Fig. 247). The palpi seem alike superficially, but when cleared in oil, *A. americanus* is seen to have the embolus much shorter than has *A. globosus*, and usually lying near the anterior edge of the radix (Figs. 236, 238, 240). The female connecting ducts are shorter than in *A. globosus*, the seminal receptacles oval, usually less than their radius apart and larger (0.08 to 0.09 mm the shorter diameter), while those of *A. globosus* are spherical, usually their radius or more apart and are smaller, 0.07 mm in diameter.

In the West Indies and Panama, *A. americanus* has been confused with small specimens of *A. caudatus*, and in Florida with *A. cancellatus*. The shape of the radix separates males, and the wide fossae in the epigyna of the latter two species separate females.

Females of *A. atopus* can be confused with *A. americanus* in Panama. Internally the structure of the epigyna is very different. Also, the abdomen of *A. atopus* bears a pair of bright silver markings in front of the spinnerets; *A. americanus* has no such silver markings on the venter, but a pair behind the spinnerets on the posterior side.

Distribution. Southeastern United States, Mexico, Central America, West Indies, Peru to southern Brazil; Map 8.

Records. United States. Florida. Alachua Co.: Gainesville (H. K. Wallace; W. J. Gertsch); Newnans Lake. Highlands Co.: Lake Placid (M. Cazier). Indian River Co.: Sebastian (G. Nelson). Martin Co.: Port Mayaca (W. J. Gertsch, R. Forster). Sarasota Co.: Myakka River State Park (W. J. Gertsch). *Texas.* Cameron Co.: (L. I. Davis); Olmito. Hidalgo Co.: Weslaco (S. Mulaik). *Mexico. Tamaulipas:* Tampico; 10 km E of Villa Juárez [Mante] (L. I. Davis). *San Luis Potosí:* Valles (L. Steude). *Veracruz:* Veracruz (H. Wagner). *Chiapas:* Cacahuatán (C. Goodnight); Tapachula (A. Petrunkevitch); La Zacualpa (A. Petrunkevitch). *Costa Rica.* Río Anonos (Tristan). *Panama.* Boquete; El Valle (both A. M. Chickering). *Canal Zone:* Barro Colorado Isl. (many coll.); Fort Randolph; Madden Dam; Miraflores Dock; Pedro Miguel (all A. M. Chickering).

Cuba. Oriente: Yunque de Baracoa (P. J. Darlington); Soledad (sev. coll.); Cuabitas (P. Alayo). *Jamaica*. St. Catharine Par.; St. James Par.; St. Andrew Par.; St. Ann Par. (A. M. Chickerling); Trelawny Par. (E. Williams). *Dominican Republic*. Rain forest near Valle Nuevo (P. J. Darlington). *Peru. Cajamarca*: Bellavista, Prov. Jaen (D. L. Frizzell). *Brazil. ?Pará*: Rio Maputra [? Mapuera], 16 km S of Equator (W. G. Hassler). *Minas Gerais*: Matozinhos (E. Gounelle, MNHN). *Rio de Janeiro*: Rio de Janeiro (Keyserling coll., BMNH).

ARGYRODES GLOBOSUS Keyserling

Figures 248-260; Map 8

Argyrodes globosus Keyserling, 1884, Die Spinnen Amerikas, Theridiidae, pt. 1, p. 204, pl. 10, fig. 123. Male type from Crescent City, Florida, in the United States National Museum, examined by Levi.

Argyrodes argentcomaculata O.P.-Cambridge, 1896, Biologia Centrali-Americana, Araneidea, vol. 1, p. 193, pl. 24, fig. 6. Male type from Teapa, Tabasco, Mexico, in the British Museum (Natural History), examined by Levi. F.P.-Cambridge, 1902, Biologia Centrali-Americana, Araneidea, vol. 2, p. 404, pl. 38, fig. 6. NEW SYNONYMY.

Conopistha roreræ Exline, 1945, Ann. Ent. Soc. Amer., vol. 38, p. 519, figs. 38-42 (fig. 39 inaccurate). Male type from Milagro, Guayas, Ecuador, in the California Academy of Sciences. NEW SYNONYMY.

Description. Male from Florida. Carapace, mouthparts, legs mostly bright yellow to orange. Cymbium of palpus, distal segments of anterior legs reddish brown. Sternum dusky. Abdomen pale with large reddish brown markings, a large bright silver patch on each side and a pair of round silver markings above spinnerets. Venter dusky. Carapace and clypeus (Fig. 254) nearly as in *A. americanus*. Eyes nearly equal in size and more evenly spaced than in *A. americanus*. Abdomen a little longer than wide, rounded behind, without median posterior hump (Fig. 255). Total length 2.3 mm. Carapace 1.1 mm long. First femur, 1.9 mm; patella and tibia, 1.9 mm; metatarsus, 1.2 mm; tarsus, 0.6 mm.

Female from same collection as male. Carapace, mouthparts and legs mostly yellow, paler than in male, distal segments of anterior legs reddish brown. Sternum dusky yellow. Abdomen entirely mottled silver. Carapace and height of clypeus as in male. Anterior median eyes larger than others, and nearer laterals than in male. Abdomen a little longer than wide, higher than long, with a pair of angular dorsal shoulders (Figs. 256, 257). Total length 2.3 mm. Carapace 1.0 mm long. First femur, 1.6 mm; patella and tibia, 1.6 mm; metatarsus, 0.8 mm; tarsus, 0.5 mm.

Variation. Not so variable in size as *A. americanus*. Florida males measure from 1.9 to 2.8 mm in length; females from 2.1 to 2.6 mm. Color not so variable as in *A. americanus*. Some males have the abdomen mostly gray with a large bright silver patch on each side. Female abdomens vary in brightness and some have a yellow cast; some are banded with pale gray or light brown. Some Mexican males are more brightly colored than any in Florida, with deep reddish brown contrasting with the shiny silver patches.

The shape of the abdomen in both sexes is quite variable, and it may be shrivelled in alcohol. In some males the abdomen is almost bluntly angular behind but never pointed or with humps. As eggs develop in the ovary, the female abdomen increases in size and becomes rounder.

There is considerable variation in shape of the palpal radix (Figs. 248-253). Also, the diagnostic characters vary. The seminal receptacles are a radius to a diameter apart and the ducts in some individuals are much shorter (Figs. 258, 259). There seems to be a corresponding variation in length of embolus (Figs. 248, 250, 252). Several collections from near Tamazunchale have the ducts and emboli noticeably shorter (Figs. 250, 258). Whether these might be hybrids is impossible to say.

Diagnosis. Superficially most specimens can be separated from *A. americanus* by the lack of a median posterior abdominal hump. Males have the embolus noticeably longer than have *A. americanus* males (to examine the palpi, one must clear them in elove oil, and take care to tilt them correctly; Figs. 248, 250, 252). The epigynum (Fig. 260) separates some females. The seminal receptacles of *A. globosus* females are spherical and their radius or more apart (Figs. 258, 259); those of *A. americanus* are usually ovoid and are separated by less than their radius. The female ducts are longer than in *A. americanus*. The diameter of seminal receptacles is 0.7 mm with little size variation; the shorter diameter of those of *A. americanus* is between 0.8-0.9 mm.

Natural History. In Ecuador this species was taken from the webs of large orb-weavers other than *Nephila*. In Louisiana a pair of *A. globosus* was found, along with a pair of *A. cancellatus*, in the web of a female *Nephila clavipes* (Linnaeus).

Distribution. Southeastern United States, Mexico, Ecuador: Map 8.

Records. *United States.* *South Carolina.* Charleston. *Georgia.* Billy's Isl., Okefinokee Swamp. *Florida.* Alachua Co.: Gainesville (W. J. Gertsch; S. Jones). Dade Co.: Royal Palm Park

[Everglades Natl. Park] (W. S. Blatchley). Glades Co.: 5 mi. S of Lake Istopoka (A. M. Nadler); Palmdale; Archibald Biol. Sta. Highland Co.: Highland Hammock, near Sebring (W. J. Gertsch, R. Forster). Lake Co.: 7 mi. E of Apopka (M. Nirenberg); Winter Park (W. J. Gertsch). Orange Co.: Orlando (M. Nirenberg). Putnam Co.: Florahome (Leonard). St. Johns Co.: St. Augustine (R. V. Chamberlin). *Alabama*. Houston Co.: Chattahoochee State Park; Dothan; S of Dothan; Big Creek near Dothan (all A. F. Archer). *Louisiana*. St. Tammany Par.: Covington (N. Banks). *Texas*. Tyler Co.: Woodville (L. I. Davis). *Mexico*. *San Luis Potosí*: 8 km N of Tamazunchale (A. M., L. I. Davis); Tamazunchale (W. J. Gertsch); 11 km E of Ciudad des Maíz (A. M. Davis). *Veracruz*: Conejo (V. Roth, W. J. Gertsch); Pánueo (A. M., L. I. Davis); Tlapacoyan (H. Wagner). *Tabasco*: Teapa (C., M. Goodnight). *Chiapas*: La Zaeualpa (A. Petrunkevitch); Tapachula (A. Petrunkevitch). *Campeche*: Lerma (C., M. Goodnight). *Cuba*. Santiago, Oriente (A. F. Archer, P. Alayo). *Ecuador*. *Guayas*: Guayaquil (D. L. Frizzell); Milagro (H. E., D. L. Frizzell).

ARGYRODES JAMAICENSIS new species

Figures 261-265; Map 8

Type. Male from Rio Cobre Gorge, St. Catherine Parish, Jamaica, British West Indies, Nov. 6, 1957 (A. M. Chickering), in the Museum of Comparative Zoology. The specific name is an adjective.

Description. Male. Carapace, mouthparts, sternum dull yellowish brown; palpi brighter. Legs brownish yellow ringed with reddish brown. Abdomen brown, red, and silvery white, speckled; a pair of very small silver spots above spinnerets. Carapace with cephalic part narrow and coming to a blunt anterior point. Anterior median eyes a little larger than others, separated by nearly a diameter, farther from anterior lateral eyes. Seen from above, anterior row recurved; posterior row nearly straight with eyes equidistant. Clypeus rather low, straight above groove, bulging forward abruptly below groove, and narrowed to blunt point (Fig. 261). Abdomen with a pair of pointed lateral humps behind spinnerets, rounded behind humps, extending little behind spinnerets. Total length 2.4 mm. Carapace 1.3 mm long. First femur, 1.8 mm; patella and tibia, 2.2 mm; metatarsus, 1.1 mm; tarsus, 0.6 mm.

Female. Carapace, sternum dull brown. Mouthparts, clypeus yellow. Legs yellow ringed with reddish brown. Abdomen gray thickly covered with silvery white spots and dark brown streaks. The pair of silvery white spots above spinnerets larger than in male. Abdomen (Fig. 263) similar but shorter, wider and higher than that of male. Total length 2.3 mm. Carapace 0.9 mm long. First femur, 1.6 mm; patella and tibia, 1.6 mm; metatarsus, 0.7 mm; tarsus, 0.6 mm.

Variation. Some specimens are darker, others paler than those described. A couple of male specimens are very dark with only a few white spots. The humps of the abdomen vary in size and are much reduced in several males. In one female the lateral humps are widespread, long and pointed. All males are approximately the same size. Females vary in total length from 1.7 to 2.3 mm.

Diagnosis. *Argyrodes jamaicensis* is similar to *A. americanus*, *A. globosus* and *A. cubensis*. The shape of the male clypeus (Fig. 261), and the higher radix of the palpal bulb, with its shallower anterior margin and more nearly straight tip (Fig. 262) separate it from the others. The conductor of the bulb is similar to that of *A. caudatus* but lacks the projection. The embolus is slender, forming a very small coil, visible through the transparent radix. The tegulum is sclerotized and slightly rugose. The epigynum has a large oval depression in front of the scape. The lateral margins that extend from the scape spiral around the fossae, which contain the openings (Fig. 265). The large spherical seminal receptacles are almost touching. Tubes are simpler than in the other two species, without loops (Fig. 264). The abdomen is often similar to that of *A. globosus*, but the color differs. The wider scape of the epigynum (Fig. 265) separates *A. jamaicensis* from *A. globosus* and *A. cubensis*.

Distribution. Only known from Jamaica; Map 8.

Records. Jamaica. (MNHN). St. Thomas Par.: Holland Bay (A. M. Nadler); Lyssons (A. M. Nadler); 10 km NE of Bath; Bawden (both A. M. Chickering). Hanover Par.: Dolphin Head Trail (A. M. Chickering). St. Catherine Par.: Rio Cobre Gorge; Guanaboa Vale (both A. M. Chickering). St. Andrew Par.: Hardwar Gap, Blue Mts. (A. M. Chickering; A. F. Archer).

ARGYRODES CUBENSIS new species

Figures 266-270; Map 8

Type. Male from La Bayamesa, 1900 m elev., Oriente, Cuba "7/3/1955" (A. F. Archer), in the American Museum of Natural History. The species name is an adjective.

Description. Male. Carapace brownish, dusky around margin; clypeus reddish. Sternum dark brown. Legs brown. Abdomen with a silvery stripe on each side, a black mark behind each lateral hump. Dorsum dusky. Venter brown anterior to spinnerets, black behind with a pair of white marks, side by side, immediately behind spinnerets. Carapace slightly raised in eye region with a deep groove below anterior median eyes and clypeus projecting and hanging below chelicerae (Fig. 266). Anterior median eyes slightly larger than others, their diameter apart. Posterior median eyes two and one-half diameters apart. Abdomen extended behind spinnerets. Total length 3.0 mm. Carapace 1.8 mm long. First femur, 2.2 mm.

Female. Carapace darker than in male, brown. First femora brown, other leg segments whitish with darker bands. Abdomen silvery except for black venter and posterior; two silvery spots behind spinnerets. Carapace with groove below eyes and clypeus slightly bulging. Eyes closer together than in male. Abdomen shorter than that of male (Fig. 268). Total length 2.2 mm. Carapace 0.9 mm long. First femur, 1.2 mm; patella and tibia, 1.3 mm; metatarsus, 0.7 mm; tarsus, 0.4 mm.

Diagnosis. The elongate abdomen separates this species from *A. jamaicensis* and *A. globosus*. The palpus is similar but the tegulum is shorter (Fig. 267). The scape of the epigynum is much narrower than that of *A. jamaicensis*, and resembles that of *A. globosus*.

Record. Cuba. ♀ paratype collected with type.

ARGYRODES MACULOSUS O.P.-Cambridge

Figures 271-275; Map 9

Argyroides maculosa O.P.-Cambridge, 1898, *Biologia Centrali-Americana*, Araneidea, vol. 1, p. 258, pl. 37, fig. 3. Female syntypes from Teapa, [Tabasco], Mexico, in the Hope Department of Entomology, Oxford University, examined by Levi.

Description. Male from Mexico. Carapace, sternum yellowish brown with clypeus yellow. Legs and mouthparts yellow with some gray. Posterior two pairs of legs annulate. Abdomen pale gray on dorsum with metallic silvery spots, especially on sides of dorsum; venter and lower part of sides reddish gray, a pair of silvery spots above spinnerets. Carapace slender; cephalic part narrowed between lateral and anterior median eyes, clypeus unusually high (Fig. 271). Anterior median eyes slightly larger than others and about a diameter apart, forming a square with

posterior median eyes; anterior laterals and posterior medians in a straight line and about equidistant. Abdomen short with a median and lateral pair of low humps and another pair of very low humps on posterior face, midway between spinnerets and dorsum. Total length 2.6 mm. Carapace 1.3 mm long. First femur, 2.4 mm; patella and tibia, 2.6 mm; metatarsus, 1.5 mm; tarsus, 0.9 mm. Another specimen had total length 2.2 mm.

Female. Carapace paler than that of male. Abdomen grayish white, streaked with dark gray and many small silvery spots. Genital area dark brown, a pair of bright silvery spots above spinnerets. Clypeus high and straight, with anterior median eyes projecting and a deep groove under eyes. Abdomen similar to that of male with three posterior humps (Fig. 273). Posterior pair of humps above spinnerets not easy to see. Total length 2.1 mm. Carapace 0.9 mm long. First femur, 1.4 mm; patella and tibia, 1.6 mm; metatarsus, 1.0 mm; tarsus, 0.6 mm. A second female, barely mature, measured 1.6 mm long.

Variation. A male collected in Florida shows some slight differences in position of the ducts and embolus. The carapace is like that of other specimens.

Diagnosis. *Argyrodes maculosus* is similar to *A. subdolosus*, *A. spinosus*, and *A. tacter*. The very high clypeus of the male (Fig. 271) separates it from the first two, and the inconspicuous embolus (Fig. 272) from *A. tacter*. The female is separated from other species by the relatively small genital plate (Fig. 275) with its short scape, and by the internal genitalia with a wide tube from each opening forming a semicircle, then sharply bending anteriorly and becoming very slender before entering seminal receptacles. The receptacles are well separated (Fig. 274). The posterior hump on the abdomen of *A. maculosus* does not develop the two pair of points found in some other species, but is of variable length, much longer in the syntypes than in more recently collected specimens.

Distribution. Florida, eastern and southern Mexico; Map 9.

Records. United States. Florida. Highlands Co.: Highland Hammock, Sebring, April 2, 1957, ♂ (W. J. Gertsch, R. Forster). *Mexico. San Luis Potosí:* Tamazunchale, July 6, 1941 (L. I. Davis); May 20, 1952 (W. Cazier, W. J. Gertsch, R. Schrammel); 8 km N of Tamazunchale, July 2, 1941 (A. M., L. I. Davis). *Veracruz:* La Buena Ventura, July 1909 (A. Petrunkevitch).

ARGYRODES TAETER new species

Figures 276-280; Map 9

Type. Male from Xilitla, San Luis Potosí, Mexico, Dec. 2, 1939 (A. M. and L. I. Davis), in the American Museum of Natural History. The specific name is a Latin adjective meaning horrid.

Description. Male. Carapace yellowish brown, sternum a little darker. Legs yellowish, with dark rings. Abdomen mostly light gray, darker gray posteriorly, thickly covered with metallic golden to silvery spots. Carapace with extremely high clypeus (Fig. 276). Anterior median eyes less than a diameter apart. Abdomen extending a little behind spinnerets with a pair of posterior, lateral and median humps which are indistinct. Total length 2.2 mm. Carapace 1.3 mm long. First femur, 2.0 mm; patella and tibia, 2.0 mm; metatarsus, 1.2 mm; tarsus, 0.8 mm.

Female. Carapace dull brown with legs a little paler and the posterior three pairs with dark rings. Abdomen darker than in male with dark brown paired streaks above, and spotted with silvery flecks. Posterior surface mostly brown with a pair of inconspicuous silvery spots above spinnerets. Genital area orange-brown. Carapace rather wide, clypeus high, slightly bulging beneath shallow groove under eyes. Eyes as in male, but closer together. Abdomen high with small lateral humps, and posteriorly a small median dorsal hump (Fig. 278). Total length 1.9 mm. Carapace 0.6 mm long. First femur 1.4 mm; patella and tibia, 1.4 mm; metatarsus, 0.6 mm; tarsus, 0.5 mm.

Diagnosis. The carapace (Fig. 276) is similar to that of *A. maculosus*, the eye region is shorter, the groove deeper and wider. The palpus (Fig. 277) is a little heavier than in *A. maculosus*; the embolus forming a large conspicuous spiral, visible through transparent radix. The radix and conductor are similar to those of *A. caudatus*. Epigynum with a blunt scape. Some sections of connecting canals show between scape and lateral walls of fossae (Fig. 280). The ducts are wider and longer than those of *A. maculosus* (Fig. 279).

Records. Mexico. San Luis Potosí: Xilitla, ♀ ♂ paratypes collected with type; Nov. 30, 1940, ♀ paratype (A. M., L. I. Davis).

ARGYRODES ULULANS O.P.-Cambridge

Figures 281-285; Map 9

Argyrodes ululans O.P.-Cambridge, 1880, Proc. Zool. Soc. London, p. 336, pl. 30, fig. 14. Male, female syntypes from the Amazon, [Brazil], in

the Hope Department of Entomology, Oxford University, examined by Levi.

Argyrodes socius Chamberlin and Ivie, 1936, Bull. Univ. Utah, biol. ser., vol. 3, no. 5, p. 40, pl. 10, figs. 90, 91. Female type from Barro Colorado Island, Panama, at the University of Utah, genitalia missing, examined by Exline. NEW SYNONYMY.

Description. Male from Panama Canal Zone. Carapace, mouthparts, legs brown with tarsi and basal part of metatarsi lighter; sternum darker. Abdomen nearly black with a longitudinal pale stripe that includes a few bright silvery spots on each side, a pair of silvery spots above spinnerets. There is considerable color variation. Carapace broad at eye region with clypeus swollen, deeply grooved (Fig. 281). Eyes approximately equal in size, with two rows close together; anterior eyes equidistant, a little over a diameter apart; posterior eyes forming straight line, with medians one and one-half diameters apart, nearer lateral eyes. Chelicerae slender with three teeth on anterior margin of fang groove, one tooth and a row of long fine denticles on the posterior margin. Abdomen greatly extended behind spinnerets with posterior tip turned down. Total length 4.0 mm. Carapace 1.5 mm long. First femur, 3.3 mm; patella and tibia, 3.5 mm; metatarsus, 2.4 mm; tarsus, 0.7 mm. Males vary from 3.3 to 4.5 mm long (one specimen only 2.8 mm long), length depending on extent of abdomen.

Female from Panama Canal Zone. Color as in male but more variable. Older females may become pale but some are reddish or nearly black with dark brown legs. Carapace with nearly parallel sides, blunt behind, narrowing in cephalic region. Clypeus moderately high. Abdomen as in male though heavier and not so long (Fig. 283). In gravid specimens the abdomen becomes very heavy and elongate. Total length 3.7 mm. Carapace 1.4 mm. long. First femur, 2.6 mm; patella and tibia, 2.7 mm; metatarsus, 1.6 mm; tarsus, 0.8 mm.

Variation. Length of females varies from 3.0 to 5.0 mm, depending mostly on age and development of ovaries. A female specimen from Fonte Boa, Amazonas, Brazil, was 6.5 mm long, with carapace 1.5 mm long. Its epigynum had an additional short transverse anterior lip overhanging a slight depression. This structure was best seen in slightly posterior view. The ends of this structure were slightly anterior to the anterior margin of lateral fossae.

Diagnosis. *Argyrodes ululans* is larger than other *Argyrodes* species from Panama and easily distinguished. It differs from

A. leonensis by having a seam on swollen portion of the male clypeus (Fig. 281), the coil of the embolus small, and the radix high with bluntly recurved tip (Fig. 282). The ducts in the median apophysis and tegulum are unlike those of other species. The female has a conspicuous wide scape with a fossa on each side (Fig. 285). The internal genitalia are illustrated by Figure 284.

Natural History. Dr. Chickering found some specimens in the webs of *Nephila clavipes* (Linnaeus).

Distribution. Southern Mexico to northern Brazil; Map 9.

Records. *Mexico.* Chiapas: Tapachula, Aug. 1909 (A. Petrunkevitch). *Panama.* El Valle, July 1936. *Panama Canal Zone.* Gamboa, July 1954 (A. M. Chickering); Barro Colorado Isl. (numerous coll.). *Venezuela.* Aragua: Maracay, 1935, 1936 (P. C. Vogl, ZSM). *Carabobo:* San Estebán, 1888 (E. Simon, MNHN). *Brazil.* (O.P.-Cambridge, 1880). *Amazonas:* Fonte Boa (de Mathan, MNHN).

ARGYRODES BRYANTAE new species

Figures 286-288; Map 9

Argyrodes maculosus, Banks, 1909, Proc. Philadelphia Acad. Sci., vol. 61, p. 205. Not *A. maculosus* O.P.-Cambridge.

Type. Male from Boquete, Panama, Aug. 1-8, 1950 (A. M. Chickering), in the Museum of Comparative Zoology. This species is named in memory of Miss Elizabeth B. Bryant, arachnologist, friend, and benefactress.

Description. Carapace yellowish brown, orange on clypeus. Sternum, mouthparts brown. Anterior legs mostly yellowish brown, posterior legs yellow with brown streaks and rings. Abdomen pale gray thickly covered with bright silvery spots, and dark gray patches on dorsum, and posterior side. Carapace gently inclined from thoracic groove to anterior margin, which is broadly rounded. Clypeus high with seam dividing it into equal halves, extending a little over base of chelicerae (Fig. 286). Eyes equal in size, posterior eyes about two diameters apart. Abdomen extended beyond spinnerets, with a pair of lateral humps a little behind spinnerets and a posterior extension, bifid at tip. Total length 3.2 mm. Carapace 1.4 mm long. First femur, 3.1 mm; patella and tibia, 3.5 mm; metatarsus, 2.4 mm; tarsus, 1.1 mm.

Female. Carapace and sternum dark, as in male. Legs reddish brown, with distal segments yellow and posterior legs annulate yellow and reddish brown. Abdomen darker than in male with a

pattern of three pairs of large black patches and a couple of median markings on dorsum with posterior side black; sides and venter as in male. Carapace low. Clypeus rather low with groove under eyes, somewhat bulging anteriorly. Anterior median eyes larger than others, over one diameter apart. Other eyes closer together than in male. Abdomen smaller, flattened dorsally, less extended behind, but with comparable protuberances (Fig. 288). Total length 2.5 mm. Carapace 1.0 mm long. First femur, 1.7 mm; patella and tibia, 1.8 mm; metatarsus, 1.0 mm; tarsus, 0.6 mm.

Variation. A male from northern Panama has the dorsal part of the clypeus higher, receding to seam, with chelicerae weaker and placed below lateral eyes so that clypeus protrudes farther.

Diagnosis. The male clypeus of *A. bryantae* (Fig. 286) is similar to that of *A. dracus*. The posterior extension of abdomen is sometimes conspicuously bifid (Fig. 288). The palpus is large, rounded. The radix is high with anterior margin almost straight, ending in a hook. Unlike related species, *A. bryantae* has the median apophysis unusually thick ventrally, crossed by three uneven, diagonal parts of the tube (Fig. 287). Embolus narrow, forming small spiral mostly covered by radix. The conductor resembles that of *A. caudatus*. Epigynum has a long scape, as in *A. dracus* but not so bulging posteriorly. Seminal receptacles small; tubes very narrow and spiralled posteriorly, enlarging greatly to arch anterior to receptacles, then narrowing abruptly before entering them. (Epigynum of the only female specimen is lost.)

Records. *Costa Rica.* Santa María Dota, ♂ (Tristan). *Panama.* Boquete, 2 ♂ paratypes collected with type; El Volcán, Chiriquí, Feb. 1936, ♂ (W. J. Gertsch).

ARGYRODES SPINOSUS Keyserling

Figures 289-291; Map 9

Argyroides spinosus Keyserling, 1884, Die Spinnen Amerikas, Theridiidae, pt. 1, p. 201, pl. 9, fig. 121. Male lectotype here designated from Amable María, [Dept. Junín], Peru, in the Polish Academy of Sciences, Warsaw, examined by Levi. (Not Keyserling, 1891, *op. cit.*, Brasilianische Spinnen, p. 214, pl. 8, fig. 155.)

The illustrations were prepared from the lectotype.

The only specimen which might be this species is a male from Hacienda Corosal, near La Silla Mt., Dist. Fed., Venezuela, 1888 (E. Simon, MNHN), which has a longer embolus, and a shorter duct loop in the tegulum, but has a similar clypeal bulge.

This species differs from *A. dracus* by the shorter embolus and bulging clypeus.

ARGYRODES GAPENSIS new species

Figures 292-294; Map 9

Type. Female from Hardwar Gap, Jamaica, Nov. 17, 1959 (A. M. Nadler), in the American Museum of Natural History. The specific name is a latinized adjective derived from a geographical name.

Description. Female. Carapace and sternum gray infused with red. Legs red banded with pale yellow. Abdomen background very pale, mottled with red and silver and with horizontal streaks of dark gray on sides and posterior. Clypeus nearly straight with groove under eyes obscure. Anterior median eyes a little larger than others, over a diameter apart, and forming a square with posterior median eyes. Lateral eyes near median eyes. Abdomen extended above rather than behind spinnerets, with a pair of conspicuous humps above spinnerets and a median dorsal protuberance (Fig. 292). Protuberance with four obscure points and with cuticle deeply wrinkled. Total length 2.6 mm. Carapace 1.2 mm long. First femur, 1.9 mm; patella and tibia, 2.0 mm; metatarsus, 1.0 mm; tarsus, 0.5 mm.

Diagnosis. Color and shape of abdomen unlike that of other West Indian species. Epigynum similar to that of *A. caudatus*, with scape a little longer and excavation anterior to it deeper (Fig. 294). A pair of conspicuous, large, round median bulges between fossa and genital groove. Seminal receptacles and anterior part of tubes (Fig. 293) as in *A. cancellatus*, with posterior part of tubes not twisted as in *A. caudatus* and *A. cancellatus*.

ARGYRODES SICKI new species

Figures 295-299; Map 9

Type. Male from Sumaré, 200-300 m elev., Cidade Rio de Janeiro, Brazil, Jan. 1946 (H. Sick), in the American Museum of Natural History. The species is named for Dr. H. Sick.

Description. Male. Carapace and sternum dark brown with clypeus and legs lighter brown, posterior three pairs of legs annulate brown and yellow. Abdomen dark gray with a few lines and small spots of silver. Carapace broad and quite blunt in front. Clypeus straight and only slightly sloping forward under anterior median eyes to a deep cleft. Cleft with nearly circular

lateral excavations covered by setae, and medially closed by lips. Below cleft, clypeus bulges anterior to and overhanging base of chelicerae (Fig. 295). Anterior median eyes larger than others, and closer together than posterior median eyes. Posterior eyes in nearly straight line if viewed from above, posterior medians separated by two and one-half diameters, by less than two from laterals. Abdomen extending a little above and behind spinnerets with a pair of pointed lateral humps, and ending above in an upper and two lower pointed tips. Total length 2.7 mm. Carapace 1.3 mm long. First femur, 2.9 mm; patella and tibia, 2.3 mm; metatarsus, 1.3 mm; tarsus, 0.8 mm.

Female. Color as in male but abdomen lighter gray; dorsum more or less outlined with rows of silvery spots and a diamond-shaped mark in middle of dorsum, two lines of silvery spots on sides, and a group of silvery spots anterior to tip. Clypeus high with anterior median eyes projecting over it. Abdomen a little higher and wider than in male, but with similar pointed protuberances (Fig. 297). Total length 2.5 mm. Carapace 0.8 mm long. First femur, 1.4 mm; patella and tibia, 1.5 mm; metatarsus, 0.8 mm; tarsus, 0.6 mm.

Variation. Size and shape are not very variable, but the humps on the abdomen are very small and not pointed in some specimens. Carapace and legs of some specimens are darker than in others.

Diagnosis. The shape of the abdomen is similar to that of *A. caudatus* and *A. dracus*. The high male clypeus with the cleft near the ventral margin (Fig. 295) separates *A. sicki* from *A. dracus*. The palpus of the male is similar to that of *A. dracus*, but more slender. The radix is long, with the anterior margin concave, ending medially in a long recurved bluntly pointed arm. The fleshy basal portion of the embolus is conspicuous; the sclerotized coiled end is mostly under the transparent radix. The conductor has a ventral, rectangular, membranous arm, and a long, sharp sclerotized tooth lying against the cymbium on the mesal side (Fig. 296).

The epigynum of the female is vaulted anteriorly, sloping to a median scape. The lateral margins of the scape curve around the fossae (Fig. 299). A pair of large round openings with sclerotized edges lie in the fossae and open to an inner sclerotized chamber (Fig. 298), perhaps similar to *A. argyroides* group. The seminal receptacles are small, anterior to the anterior wall. The tubes are difficult to see. They lie in the mesal wall of the vaulted sclerotized chamber, and empty directly into the receptacles

(Fig. 298). No other species known has spherical chambers such as found in *A. sicki*.

Natural History. The species has been collected from webs of *Nephila*.

Distribution. Southeastern Brazil; Map 9.

Records. Brazil. Rio de Janeiro: Sumaré, Cidade Rio de Janeiro, 200-400 m elev., Jan.-March 1946, ♀ ♂ paratypes (H. Sick); Teresópolis, 900-1000 m elev., March 1946 (H. Sick).

ARGYRODES CAUDATUS (Taczanowski)

Figures 300-322; Map 10

Ero caudatus Taczanowski, 1872 (1873), Horae Soc. Ent. Rossicae, vol. 10, p. 63. Male, female syntypes from Uassa, French Guiana [Uaçá, Amapá, Brazil], in the Polish Academy of Sciences, examined by Levi.

Argyrodes sextuberculata O.P.-Cambridge, 1880, Proc. Zool. Soc. London, p. 335, pl. 30, fig. 13. Male, female syntypes from Amazon, Brazil, in the Hope Department of Entomology, Oxford University, examined by Levi. NEW SYNONYMY.

Argyrodes felix O.P.-Cambridge, 1880, *ibid.*, p. 340, pl. 30, fig. 19. Female type from Paraná, Brazil, in the Hope Department of Entomology, Oxford University, examined by Levi. NEW SYNONYMY.

Argyrodes caudatus, Keyserling, 1884, Die Spinnen Amerikas, Theridiidae, pt. 1, p. 198, pl. 9, fig. 119. Petrunkevitch, 1930, Trans. Connecticut Acad. Sci., vol. 30, p. 182, figs. 23-26.

Argyrodes cylindrica Franganillo, 1936, Los Arácnidos de Cuba, Havana, p. 57, figs. 22, 23. Types from Oriente, Cuba, probably lost. NEW SYNONYMY.

Argyrodes parvior Chamberlin and Ivie, 1936, Bull. Univ. Utah, biol. ser., vol. 3, no. 5, p. 37, figs. 85, 86. In part, female only. (Male type = *A. americanus*.)

Argyrodes vexus Chamberlin and Ivie, 1936, *ibid.*, p. 39, figs. 76-78. Male type from Panama Canal Zone, in the American Museum of Natural History, examined by Exline. NEW SYNONYMY.

Conopistha caudata, Bryant, 1940, Bull. Mus. Comp. Zool., vol. 86, no. 7, p. 306.

Conopistha obtusa, Bryant, 1940, *ibid.*, p. 308. Caporaiacco, 1948, Proc. Zool. Soc. London, vol. 118, p. 649, fig. 56. Not *A. obtusus* O.P.-Cambridge.

Conopistha manta Exline, 1945, Ann. Ent. Soc. America, vol. 38, p. 524, figs. 24-33. Holotype from Manta, Manabí, Ecuador, in the California Academy of Sciences. NEW SYNONYMY.

Description. Male from Panama Canal Zone (compared with type). Carapace, mouthparts, sternum, and femora, patellae and tibiae of first two pairs of legs light brown. Other legs and segments pale yellow with brown and red annulations. Dorsum and posterior side of abdomen tan, outlined with dark gray streaks

and with some irregular gray markings and dull silvery spots. Sides mostly covered with silver. Venter silver, red and black, with genital and lung areas brown. Carapace lowest at thoracic groove, wide at lateral eyes, then abruptly narrowed in front to width of anterior median eyes. Anterior median eyes largest, projecting slightly over clypeus, about a diameter apart, as far from posterior medians and farther from anterior laterals. Median eyes forming a square. Posterior eyes in recurved row, about equidistant, widely separated. Lateral eyes sometimes separated. Clypeus rather low. Groove near eyes closed, narrow; below groove, clypeus nearly straight, very slightly projecting in middle. Chelicerae long (Figs. 300-306). Abdomen extended far beyond spinnerets, with a pair of posterior lateral humps, and a blunt median posterior hump with a trace of four points. Total length 4.3 mm. Carapace 1.8 mm long. First femur, 3.3 mm; patella and tibia, 3.9 mm; metatarsus, 2.4 mm; tarsus, 0.9 mm.

Female from same collection. Carapace, sternum and legs colored as in male. Dorsum and posterior side of abdomen light brown with a few dull silver spots and outlined with groups of spots. Sides and venter speckled brown and silver. Epigynum and lung cuticle light brown. Carapace smoother than that of male. Eyes much closer together. Anterior median eyes largest and about a diameter apart. Clypeus moderately high, slightly rounded beneath a shallow groove under eyes. Abdomen extending beyond spinnerets with a pair of low lateral humps, and a median posterior hump with two dorsal points and two more widely spaced ventral points (Fig. 319). Total length 3.5 mm. Carapace 1.3 mm long. First femur, 2.1 mm; patella and tibia, 2.4 mm; metatarsus, 1.3 mm; tarsus, 0.6 mm.

Figures 307, 314, 320 were prepared from the syntypes of *Ero caudatus*.

Variation. Size, color and shape of abdomen are extremely variable. Males vary in length from 2.5 to 5.3 mm; females from 2.2 to 4.0 mm. Color varies from very pale to dark, and some specimens have a reddish cast. The pattern of the abdomen is conspicuous in some specimens; a few specimens have dorsum black with sides a bright contrasting silver; in others the dorsum is dark gray bordered with narrow streaks of black and a broad band of bright silver. Many specimens (especially from Panama) are almost black with only a few silvery spots. Pale specimens have the abdomen light gray or tan, sometimes streaked with darker gray and partially covered with dull silvery spots; a few

specimens have the abdomen almost all dull silver. The shape of the abdomen varies from broadly oval with low lateral and posterior humps, to elongate, extended considerably beyond the spinnerets, and with or without conspicuous humps. The posterior projection may end in conspicuous fleshy points, or these may be almost non-existent.

Size and distance between eyes are variable, but the shape of the carapace and clypeus is fairly constant (Figs. 300-306). The clypeal shape is most variable in Texas and Mexico (Figs. 303-306); that of a specimen from southern Brazil also differs (Fig. 300). The lateral eyes may be separated. The tip of the male radix varies in length; the tip of the conductor is long, sometimes rather conspicuous, and sometimes almost invisible. The width of the fossae of the epigynum is variable, and the anterior margin may be almost straight or may have a small, rounded, median lip (Figs. 320-322). One female from Tingo María, Peru, has a noticeably sclerotized scape. One specimen from Cuba has the scape unusually long, but the internal genitalia as in other specimens. The position of the anterior loops of the duct is extremely variable in different individuals and also geographically. They loop anterior to the seminal receptacles (as in *A. cancellatus*) in Mexican specimens (Fig. 318); in specimens from Panama one side may be anterior but not the other. The duct is narrowed near seminal receptacles in most specimens except those from Mexico (Figs. 311-316). The duct is most variable in southern and eastern Brazil (Figs. 311-313) and some specimens may belong to a different species (Fig. 311). Specimens from Mexico in general resemble *A. cancellatus*.

Some intermediates are found in southern Florida, Bimini, Cuba and Dominican Republic. Females have the epigynum less swollen, as in *A. caudatus*, but the internal genitalia are as in *A. cancellatus*. One female from Jamaica and one from San Estebán, Venezuela, thought to be *A. caudatus*, had internal genitalia similar to those of *A. cancellatus*. Several males have the carapace high as in *A. cancellatus*, the clypeus straight as in *A. caudatus*, and the palpus much wider than that of *A. caudatus*. Males of *A. caudatus* have been collected with females having these intermediate characters in Monroe County, Florida and Bimini. Males were collected with other *A. caudatus* males in Bimini and Cuba. Two males from the Dominican Republic mountains have the clypeus intermediate; one male has the palpus (Fig. 310) somewhat like that of *A. cancellatus*, the other has a

shorter tegulum loop but a longer embolus [Loma Lucilla Mts., Cordillera Central, 1500-2000 m elev., June 1938 (P. J. Darlington); between Constanza and Lomo Cibao, Aug. 1958 (A. F. Archer)].

A much larger number of specimens is needed to study this variation in detail, and in particular, to understand the specimens believed to be intermediate with *A. cancellatus*.

Diagnosis. Males of *A. caudatus* can be separated from those of *A. cancellatus* by the straight rather than bulging elypeus and by the longer chelicerae. The anterior median eyes are usually larger than the others (Figs. 300-306). The females have the epigynum (Figs. 320-322) flat behind the openings, not swollen as in *A. cancellatus*. The internal ducts are shorter and not fused (Figs. 311-318).

Distribution. Southern Texas, Florida to southern Brazil; Map 10.

Records. United States. Florida. Dade Co.: Miami, 1903, ♂ (J. Comstock). Monroe Co.: Tavernier, ♀ ♂, Nov. 29, 1952 (A. M. Nadler); Palmetto Key (C. M. Breder). *Texas.* Hidalgo Co.: Edinburg, 1933, ♂ (S. Mulaik); 7 mi. E of Edinburg, Oct. 14, 1936, ♂ (S. Mulaik); S of Pharr, Apr. 5, 1936, ♂ (S. Mulaik).

Mexico. Tamaulipas: near El Limón (C. M. Goodnight); 10 km E of Villa Juárez (L. I. Davis). *San Luis Potosí:* 8 km N of Tamazunchale (A. M., L. I. Davis); Valles (L. Steude). *Vera-cruz:* Cordoba (J. C., D. L. Pallister); 24 km E of Pánuco (A. M., L. I. Davis); Tecolutla (M. Johnston, A. M. Davis). *Chiapas:* Tonalá (A. Petrunkevitch). *Costa Rica.* Río Anonos (Tristan); San José (E. Schmidt). *Panama.* La Campana (E. Fiechter). *Panama Canal Zone.* Forest Reserve; Ancon; Cocoli; Experimental Gardens; Miraflores Lock; Summit; Ft. Sherman; Chilibre; France Field; Madden Dam; Chiva Rd.; near Pedro Miguel; Farfan; Ft. Randolph; Summit Park; Arraiján; El Valle; Fort Davis; Balboa; Barro Colorado Isl.

Bahama Isl. South Bimini (A. M. Nadler); Grand Bahama Isl. (Hayden, Rabb). *Cuba.* Oriente: Banes (A. F. Archer). Villas: Soledad (P. J. Darlington; L. G. Worley). Matanzas: Pan de Palenque (A. F. Archer). Pinar del Rio: Sierra de Anafe (M. Barro). *Jamaica.* Trelawny Par.: Rd. to Adelphi. St. Andrew Par.: Kingston. St. Catherine Par.: Guanaboa Valley; near Bushby; near Spanish Town. St. Thomas Par.: Morant Bay Rd. Clarendon Par. Portland Par.: Hardwar Gap. *Dominican Republic.* Colonia Ramfis, Trujillo Váldez (A. F. Archer); Puerto

Plata (D. Hurst); near La Romana (Hassler). *Puerto Rico*. E of San Sebastián Collazo (A. F. Archer); Mayagüez (A. F. Archer; A. M. Nadler); N of Las María Mts. de Urayan (A. F. Archer); Rio Piedras (A. M. Nadler); Cuevas de los Alfanos, Barro Mona (A. F. Archer); ?Rubianes (A. F. Archer); Arecibo (A. M. Nadler). *Virgin Isl.* St. Thomas Isl. (A. F. Archer). St. John (A. F. Archer). St. Croix: Christianstad (A. M. Nadler; H. A. Beatty). *Lesser Antilles.* St. Vincent Isl. (MNHN). *Trinidad:* (MNHN); Gasperee (R. H. Montgomery); Mt. St. Benedict (J. G. Myers). *Aruba.* (A. M. Nadler).

Venezuela. *Aragua:* Maracay (A. M. Nadler). *Dist. Fed.:* La Guaira, Caracas (E. Simon, MNHN). *Carabobo:* San Estebán (E. Simon, MNHN). *British Guiana.* Sauri-wau River, near Tacutu (W. G. Hassler). *French Guiana.* Cayenne (A. M. Nadler). *Ecuador.* Guayas: 5 km N of Manglar Alto (E. I. Schlinger, E. S. Ross); 13 km S of Manglar Alto (E. I. Schlinger, E. S. Ross). *Peru.* *Loreto:* Pebas (M. de Mathan, MNHN). *Huánuco:* Monzon Valley, Tingo María (E. I. Schlinger, E. S. Ross). *Brazil.* *Pará:* Santarém (MNHN). *Ceara:* Serra Community (MNHN). *Bahía:* Condeúba (E. Gounelle, MNHN); Salvador (MNHN). *Espírito Santo:* Santa Teresa (A. M. Nadler). *São Paulo:* Jequirituba, São Paulo (H. Sick). *Paraguay.* *Alto Paraná:* Taquararapá.

ARGYRODES CANCELLATUS (Hentz)

Figures 323-336; Map 10

- Theridion cancellatum* Hentz, 1850, Proc. Boston Soc. Nat. Hist., vol. 6, p. 278, pl. 9, figs. 17, 18. Types from Alabama, lost. 1875, The spiders of the United States, p. 149, pl. 16, figs. 17, 18.
- Lasaeola cancellata*, Emerton, 1882, Trans. Connecticut Acad. Sci., vol. 6, p. 26, pl. 5, fig. 4.
- Argyrodes larvatus* Keyserling, 1884, Die Spinnen Amerikas, Theridiidae, pt. 1, p. 197, pl. 9, fig. 118. Male type from Columbus, [Colorado Co.], Texas, in the United States National Museum.
- Bellinda cancellata*, Keyserling, 1884, *op. cit.*, pt. 1, p. 216, pl. 10, fig. 130.
- Argyrodes cancellatus*, Keyserling, 1886, *op. cit.*, pt. 2, p. 243, pl. 20, fig. 297. Emerton, 1909, Trans. Connecticut Acad. Sci., vol. 14, p. 184, pl. 1, fig. 10. Bonnet, 1955, Bibliographia Araneorum, vol. 2, pt. 1, p. 709.
- Conopistha cancellata*, Kaston, 1948, Bull. Connecticut Geol. Nat. Hist. Surv., no. 70, p. 88, pl. 4, figs. 80-84.
- Conopistha partita*, Chamberlin and Ivie, 1944, Bull. Univ. Utah, biol. ser., vol. 8, no. 5, p. 38. Archer, 1946, Paper Alabama Mus. Nat. Hist., no. 22, p. 28.

Note. Although this species had been widely known for nearly a hundred years as *Argyrodes cancellatus* (Hentz), Chamberlin and Ivie (1944) suggested that the name is a synonym of *Theridion partitum* Walekenaer (1841, Histoire naturelle des Insectes Aptères, vol. 2, p. 323). However, Abbot's drawing in the British Museum, to which Walekenaer gave the name, is not diagnostic.

Description. Male from Lawrence County, Alabama. Carapace brown. Legs light brown near body, with distal part of femora and other segments darker; posterior legs paler with joints dark brown. Abdomen dark gray speckled with white or dull silver spots. Carapace flat, gradually and only slightly raised to eye region. Head broad, bluntly rounded in front. Eyes small, anterior medians very little larger than others, separated by about a diameter, farther from lateral eyes. Posterior eyes equidistant, nearly three diameters apart. Lateral eyes slightly but distinctly separated. Clypeus high, receding beneath anterior median eyes to groove, then bulging to a blunt point in front of and below base of chelicerae (Figs. 323-331). Groove hidden by setae from above and below. Chelicerae heavy, short, about equal to height of clypeus. Abdomen elongate, extending behind spinnerets with a pair of lateral humps and a median posterior projection with two pairs of points. Total length 3.8 mm. Carapace 1.7 mm long. First femur, 3.0 mm; patella and tibia, 3.5 mm; metatarsus, 2.3 mm; tarsus, 1.1 mm.

Female from same collection. Color and pattern as in male. Carapace as in male but shorter. Clypeus high with wide shallow groove under eyes, bulging below groove. Eyes as in male except medians nearer to laterals. Abdomen shorter, not extending so far behind spinnerets, rounder, higher, with similar humps (Fig. 335). Total length 3.2 mm. Carapace 1.2 mm long. First femur, 1.9 mm; patella and tibia, 2.2 mm; metatarsus, 1.3 mm; tarsus, 0.7 mm.

Variation. Size and color are variable in all populations. Males measure from 2.5 to 4.5 mm; females from 2.3 to 3.5 mm. Individuals from New York, North and South Carolina, and Arkansas are larger than those from Florida, Mississippi and Louisiana. Pale and dark specimens are found in most populations. The carapace and legs are mostly yellow or pale gray; abdomen pale gray and silver, or sometimes nearly all silvery in pale specimens. In dark specimens, the carapace may be almost black, or deep brown, and abdomen dark gray to black with only a few gray and silver spots. Some specimens, especially from the Northeast,

have a golden cast, with the carapace reddish brown and the abdomen speckled with red, gray and silver. The posterior median eyes vary from two to three diameters apart; lateral eyes may be nearly contiguous to over a radius apart. The male clypeus usually recedes in the middle at the groove, then bulges and protrudes below the base of the chelicerae, but the extent of the protrusion is variable (Figs. 323-331). The scape of the epigynum in some specimens projects ventrally; in some it is more rounded. In some specimens the humps of the abdomen are poorly developed; in a few they are exaggerated. The dorsal pair of posterior points are united in many specimens.

Diagnosis. *Argyrodes cancellatus* is similar to *A. caudatus*, but is separated by having the anterior edge of the male clypeus bulging, the chelicerae much shorter (Figs. 323-331), and the anterior margin of head rounded. The male palpus is similar, but usually more rounded in outline. Females usually have the abdomen shorter and rounder (Fig. 335) than that of *A. caudatus*. The epigynum is larger and bulges behind scape (Fig. 337). The seminal receptacles are very small, round, and close together. The tubes are longer, and loop anterior to receptacles; unlike those of *A. caudatus*, they are fused together into sclerotized masses posteriorly (Figs. 333-334). The separation of some female specimens is difficult and the genitalia may have to be cleared. It has been collected with *A. caudatus* in southern Florida and Bahama Islands, and some specimens seem to be intermediate. A female from Jamaica and one from San Estebán, Venezuela, first thought to be *A. caudatus*, have sclerotized internal genitalia like *A. cancellatus*.

Natural History. *Argyrodes cancellatus* has been collected in New York in webs of *Epeira strix* [*Araneus cornutus* (Clerck)]; and under stones by J. H. Emerton; in webs of *Agelenopsis* by W. J. Gertsch; in *Agelenopsis* webs in Mississippi by H. Exline; and in webs of *Nephila clavipes* (Linnaeus) in Louisiana by H. Exline. Archer (1946) reports it in Alabama in webs of "*Allepeira lemniscata*, *Argiope aurantia*, *Metepeira labyrinthea*, *Nephila clavipes*, and *Verrucosa arenata*. It is also found in the webs of *Frontinella pyramitela*, and in cave entrances in the webs of *Theridion tepidariorum* and a species of *Pholcus*." Several individuals may live in one host web. The egg-case is small and round with a wide posterior lip, and hangs by strong threads. Several egg-cases are often found together.

Distribution. Eastern North America; Map 10.

Records. *Canada. Ontario.* East Sister Isl., Lake Erie (J. A. Beatty). *United States. New Hampshire.* Hillsborough Co.: Hollis. *Connecticut.* Fairfield Co.: Norwalk (R. V. Chamberlin). New Haven Co.: New Haven (J. H. Emerton). *New York.* Suffolk Co.: Cold Spring Harbor (sev. coll.). *Pennsylvania.* Berks Co.: Shillington (L. Hook). *Ohio.* Hocking Co.: Rockbridge. Ottawa Co.: South Bass Isl. (J. A. Beatty). *District of Columbia.* (Fox). *Virginia.* Brunswick Co.: Alberta. Fairfax Co.: Falls Church (N. Banks); Mt. Vernon. *Kentucky.* Breathitt Co.: Noble (L. Giovannoli). Edmonson Co.: Mammoth Cave. *Tennessee.* Bedford Co.: Shelbyville (A. F. Archer). Davidson Co.: Nashville (A. R. Laskey). Grundy Co.: Bersheeba. *North Carolina.* Carteret Co.: Lennox Pt. (R. D. Barnes). Durham Co.: Durham (J. H. Emerton); Duke Forest (H., L. Levi; R. D. Barnes). Orange Co.: Chapel Hill (J. H. Emerton). *South Carolina.* Charleston (J. H. Emerton). *Florida.* Collier Co.: Royal Palm Hammock (S. Rounds). De Soto Co.: W of Arcadia (W. J. Gertsch). Hillsborough Co.: Hillsborough Riv. State Park (W. J. Gertsch). Gadsden Co.: Quiney (W. J. Gertsch). Gulf Co.: Wewahitchka. Lake Co.: Leesburg (M. Statham). Liberty Co.: Torreya State Park (W. J. Gertsch). Monroe Co.: Tavernier (A. M. Nadler). Pinellas Co.: Dunedin (W. S. Blatchley). Seminole Co.: Longwood (W. J. Gertsch). *Alabama.* Baldwin Co.: Lagoon (A. F. Archer). De Kalb Co.: De Soto State Park (A. F. Archer). Mobile Co.: Mobile (A. F. Archer); Dauphin Isl. (A. F. Archer). Tuscaloosa Co.: Tuscaloosa (A. F. Archer). Winston Co.: Bankhead Natl. Forest (A. F. Archer). *Mississippi.* Clarke Co.: Shubota (H. E. Frizzell). Jackson Co.: Pascagoula (H. E. Frizzell). Warren Co.: Vicksburg (H. E. Frizzell). Wilkinson Co.: Centreville (A. F. Archer). *Louisiana.* Ascension Par.: Donaldsonville (H. E. Frizzell). *Missouri.* Phelps Co.: 10 mi. S of Rolla (H. E. Frizzell). *Arkansas.* Washington Co.: Cove Creek Valley (M. Hite). *Texas.* Denton Co.: Clear Creek (S. Jones). Liberty Co.: Liberty (S. Mulaik). Robertson Co.: Easterly (H., D. Frizzell). San Augustine Co.: San Augustine (S. Mulaik). Tyler Co.: Woodville (L. I. Davis). Walker Co.: Huntsville (S. Mulaik).

Bahama Isl. South Bimini, ♀ (W. J. Gertsch, M. A. Cazier).

ARGYRODES DARLINGTONI new species

Figures 337-341; Map 11

Type. Female from rain forest near Valle Nuevo, 2000 m elev., Dominican Republic, Aug. 1938 (P. J. Darlington), in the Museum of Comparative Zoology. The species is named in honor of the collector.

Description. Male. Carapace, sternum, legs dusky yellow. Legs annulate, especially posterior legs. Sternum with median longitudinal gray stripe. Abdomen pale gray with dorsum outlined in darker gray, with dark streaks, especially behind humps and at tip, sparsely covered with dull silvery spots. Cephalic region narrowed. Clypeus rather high, nearly straight with a seam (Fig. 337). Eyes approximately equal in size. Anterior median eyes over a diameter apart, nearer lateral eyes than in related species. Posterior median eyes a diameter and a half apart and nearer lateral eyes. Abdomen elongate, dorsum flattened with a pair of low lateral humps and a posterior projection with three fleshy, pointed tips. Total length 3.3 mm. Carapace 1.2 mm long. First femur, 2.0 mm; patella and tibia, 2.3 mm; metatarsus, 1.4 mm.

Female. Carapace yellow-brown, becoming yellow on clypeus and chelicerae. Legs annulate yellow and brown. Sternum yellow, brown posteriorly. Abdomen pale gray, streaked and somewhat mottled with dark gray and dull silver. Clypeus rounded, nearly straight. Anterior median eyes a little larger than others, otherwise similar to eyes of male. Abdomen shorter, wider, higher than in male, somewhat flattened on dorsum, with a low pair of lateral humps, a pair of conspicuous humps above spinnerets, and a short posterior tubercle, ending in three short blunt tips (Fig. 339). Total length 2.7 mm. Carapace 1.1 mm long. First femur, 1.7 mm; patella and tibia, 1.8 mm; metatarsus, 0.8 mm; tarsus, 0.6 mm.

Diagnosis. Male palpus similar to that of *A. caudatus* with radix shorter, ending in a hook that is widened and truncate at its end (Fig. 338). Embolic spiral a little wider than in *A. caudatus*. Female epigynum with a broad scape, wide and blunt. Openings closer together than in related species, and tubes leading from them visible far to the sides (Fig. 341). Unlike *A. quasi-obtusus*, *A. darlingtoni* has the ducts enter the seminal receptacles on the anterior lateral side (Fig. 341) and the duct lumina inside the fused sclerotized bodies are distinct. The sexes have been matched on the basis of similar color pattern and abdominal humps.

Distribution. Jamaica, Haiti; Map 11.

Records. *Jamaica.* 1 km E of Reading, St. James Par., June 23, 1954, ♀. *Haiti.* 2 km E of Cayes du Jaemel, Sept. 2, 1935, ♂ (W. G. Hassler); 40 km from Aux Cayes, 700-1000 m elev., Aug. 29, 1935, ♂ (W. G. Hassler).

ARGYRODES GODMANI new species

Figures 342-346; Map 11

Argyrodes maculosus, F.P.-Cambridge, 1902, *Biologia Centrali-Americana*, Araneidea, vol. 2, p. 405 (in part), pl. 38, figs. 12, 13, 13a (not fig. 13b = *A. convolutus*). Not *A. maculosus* O.P.-Cambridge.

Type. Male from Guatemala, 1896-1901 (F. Sargent), in the Godman collection in the British Museum (Natural History). The specific name is in honor of the former owner of the collection.

Description. Male. Carapace, sternum and legs yellow; posterior legs annulate. (Abdomen missing.) Carapace low, rounded in front. Clypeus high with deep groove, closed in center, with wide excavations at sides, and protruding ventrally as a blunt point over base of chelicerae (Fig. 342). Anterior median eyes very large, only their radius apart. Posterior eyes not so widely spaced as in related species; medians nearer laterals than each other. Carapace 1.2 mm long. First femur, 1.7 mm; patella and tibia, 2.2 mm; metatarsus, 1.4 mm.

Female. Carapace and legs colored as in male. Abdomen tan with large splashes and streaks of tiny silvery spots. Carapace as in male with anterior median eyes large but farther apart. Clypeus moderately high, straight. Abdomen high, rounded, with small lateral humps above spinnerets and a very small posterior tubercle with a tiny median dorsal spine, and a pair of tiny ventral spines (Fig. 344). Total length 2.7 mm. Carapace 1.2 mm long. First femur, 1.8 mm; patella and tibia, 2.1 mm; metatarsus, 1.0 mm; tarsus, 0.6 mm.

Diagnosis. The male resembles *A. dracus*, but the clypeus is higher, has a deeper more dorsal groove, and the eyes are larger (Fig. 342). The palpus has a long radix, ending in a hook; the embolus forms a large spiral (Fig. 343). The epigynum has a long, rather slender scape, with sides extending in wide sclerotized arches, leaving a narrow fossa with conspicuous openings (Fig. 346). The seminal receptacles are small. A wide heavily sclerotized tube forms a half spiral, from the end of which arises a narrow tube connecting it with the receptacles (Fig. 345). The shorter duct separates this species from *A. dracus*.

Record. *Guatemala.* 2 ♀ paratypes collected with type.

ARGYRODES QUASIOBTUSUS new species

Figures 347-351; Map 11

Type. Male from St. John, Virgin Islands, July 10-12, 1958 (A. F. Archer), in the American Museum of Natural History. The specific name is a compound Latin adjective, meaning almost blunt.

Description. Male. Carapace dusky, yellow on head and clypeus. Legs pale yellow with dusky and reddish brown annulations. Sternum mottled reddish brown and yellow. Abdomen with entire dorsum dark gray to black. Sides, posterior and venter grayish white with dull silvery spots. Carapace flat, narrowed and rounded in front. Clypeus moderately high, straight, with median seam, and slightly overhanging base of chelicerae (Fig. 347). Eyes about equal in size, all farther apart than in related species; anterior median eyes very distant from laterals. Abdomen narrow, sides undulating; a pair of humps above spinnerets; projecting bluntly behind, bifurcate at posterior tip. Total length 3.6 mm. Carapace 1.5 mm long. First femur, 2.3 mm; patella and tibia, 2.6 mm; metatarsus, 1.5 mm.

Female. Carapace dark gray infused with yellow, yellow on clypeus and mouthparts. Legs pale yellow, ringed with reddish brown. Sternum yellow with reddish markings. Abdomen dorsum dark gray to black, paler gray in center. Sides and venter whitish, mottled with dark gray, reddish brown, and dull silver. Carapace flat. Clypeus moderately high, somewhat rounded under groove. Eyes larger than those of male and closer to each other. The shape of the abdomen as in male (Fig. 349). Total length 2.5 mm. Carapace 1.0 mm long. First femur, 1.6 mm; patella and tibia, 1.7 mm; metatarsus, 0.8 mm.

Diagnosis. The shape of the abdomen and eyes of male are distinctive. The male palpus is similar to that of *A. caudatus*, with shorter radix, ending in widely recurved slender tip. The dorsal arm of the conductor is tooth-like, projecting ventrally (Fig. 348). The scape of the epigynum is long and bluntly pointed with openings large and lateral (Fig. 351). The scape is flat, without a bulge behind it, separating it from *A. dracus*. The seminal receptacles are of moderate size; the coils of tubes are fused and sclerotized in a pair of bodies (Fig. 350) a little shorter than those of *A. darlingtoni*. The sexes have been matched on the basis of the similarity of pattern and shape of abdomen.

Distribution. Puerto Rico, Virgin Islands; Map 11.

Records. Puerto Rico. El Yunque, Sierra Luquillo, Aug. 7, 1957, ♀ (A. F. Archer); Las Cruces, March 28, 1930, ♀ (Leonard); Maricao Forest, June 2-3, 1938, ♂ (P. J. Darlington).

ARGYRODES DRACUS Chamberlin and Ivie

Figures 352-358; Map 11

Argyroides maculosus, F.P.-Cambridge, 1902, *Biologia Centrali-Americana*, Araneidea, vol. 2, p. 405, pl. 38, figs. 12, 12a, 13b, not figs. 13, 13a. Not *A. maculosus* O.P.-Cambridge.

Argyroides dracus Chamberlin and Ivie, 1936, *Bull. Univ. Utah, biol. ser.*, vol. 3, no. 5, p. 38, figs. 73-75, not figs. 88, 89, ♀. Male holotype from Barro Colorado Island, Panama Canal Zone, lost.

Conopistha spinosa, Exline, 1945, *Ann. Ent. Soc. America*, vol. 38, p. 522, figs. 34-37. Not *A. spinosus* Keyserling.

Comments. This species has erroneously been called *A. maculosus* in North American collections. In collections from South America, *A. dracus* has been confused with *A. convolutus* and *A. spinosus*.

Description. Male from Panama Canal Zone. Carapace, sternum, mouthparts orange-yellow, infused with gray. Legs similar but posterior legs with reddish brown annulations. Abdomen gray sometimes with a reddish cast, and many silvery white spots. Cephalic part of carapace rounded in front. Clypeus straight, high, and extending ventrally over base of chelicerae, with short shallow groove below eyes (Figs. 352, 353). Anterior median eyes a little larger than others, separated by about a diameter, farther from anterior laterals; median ocular area almost square, a little wider behind; posterior eyes equally spaced. Abdomen short, extending little behind spinnerets with a pair of lateral pointed humps, and two postero-dorsal pairs of pointed tips sometimes borne on a single protuberance. All tips inconspicuous in some specimens. Total length 2.6 mm. Carapace 1.3 mm long. First femur, 2.2 mm; patella and tibia, 2.5 mm; metatarsus, 1.3 mm; tarsus, 0.8 mm.

Female. Coloration as in male. Carapace broad, clypeus moderately high, almost vertical with a narrow groove below anterior eyes, and slightly bulging below groove. Abdomen (Fig. 355) similar to that of male, but usually wider and higher; protuberances not so conspicuous and sometimes barely evident. Not much variability in shape of abdomen between young and gravid females. Total length 2.3 mm. Carapace 0.8 mm long. First femur, 1.5 mm; patella and tibia, 1.6 mm; metatarsus, 0.7 mm; tarsus, 0.6 mm.

Variation. Males vary in length from 2.4 to 3.0 mm; females from 1.6 to 2.5 mm. The hook of the male radix, usually rounded, is sometimes straightened toward the tip, and there is some variation in size. In some specimens the scape of the female epigynum is rebordered. The distal part of the connecting canals is enlarged and then abruptly narrowed before entering the receptacles in some Panamanian specimens and in females from Paraguay. In older females the posterior convolutions of the connecting canals are surrounded by cuticle, the canals are grown together, and may be heavily sclerotized (Fig. 356). The abdominal protuberances are evident in some specimens, not in others. A male from San Luis Potosí has the carapace bright yellow, the legs lacking annulations, and the abdomen pale gray with silvery spots. A male from Chiapas also is pale, but has annulate legs. A male from Paraguay is paler than most specimens from Panama, and has the posterior legs slightly annulate, the hook of the radix somewhat straightened, and the tip and the embolus not so heavily sclerotized.

Diagnosis. *Argyrodes dracus* is very similar to *A. godmani*, *A. chickeringi* and *A. subdolosus* in size and general appearance, although the latter two lack the abdominal pointed tips of *A. dracus*. Males are separated from most related species in having the clypeus straight and slightly produced over the base of chelicerae (Figs. 352, 353). The width of the male palpus and small hook at tip of its radix (Fig. 354) separate it from *A. chickeringi*. It is separated from *A. maculosus* by the characters of the clypeus, and from *A. godmani* by shape of clypeus, somewhat wider embolus tube and narrower hook on radix. Females are separated from the other species by the tapering, pointed scape, directed ventrally, and by the bulge posterior to it (Figs. 357, 358).

Distribution. Southern United States to Paraguay; Map 11.

Records. *United States.* *Alabama.* Houston Co.: Dothan, 1939, ♀ (A. F. Areher). *Mexico.* *San Luis Potosí:* Tamazunchale, (L. I. Davis). *Oaxaca:* Tolosa (B. Malkin). *Chiapas:* Las Ruinas de Palenque (C., M. Goodnight). *Panama Canal Zone.* Barro Colorado Isl. (many coll.); Fort Randolph; Fort Davis; Experimental Gardens; France Field; Boquete; Madden Dam; Summit; Pedro Miguel; Forest Reserve (all A. M. Chickering). *Venezuela.* [probably northern Venezuela coll. by Simon] (MNHN). *Ecuador.* *Guayas:* Milagro (Exline, 1945). *Brazil.* Espírito Santo (Keyserling, 1891, in part). *Paraguay.* *Alto-Paraná:* Teguapapa [? = Tacuara], ♀ ♂.

ARGYRODES CHICKERINGI new species

Figures 359-364; Map 11

Type. Male from Barro Colorado Island, Panama Canal Zone, July 30, 1936 (A. M. Chickering), in the Museum of Comparative Zoology. This species is named for Dr. Chickering.

Description. Male with carapace, chelicerae and legs bright yellowish brown; sternum darker. Abdomen dull black or gray with a pair of contiguous whitish spots on posterior part of dorsum and a broad whitish band separating dorsum from sides, the white parts having a few silvery flecks. A pair of round silvery spots above spinnerets. Venter brownish gray. Clypeus moderately high, greatly receding at groove and slightly overlapping base of chelicerae (Fig. 360). Groove two-thirds height of clypeus from ventral edge, and thickly bordered with setae. Eyes small. Anterior median eyes largest and separated by a diameter, farther from posterior median and lateral eyes. Posterior eyes forming a very recurved line, equally and widely spaced. Abdomen extended only a little behind and above spinnerets, without humps but somewhat angular at posterior lateral extremity and faintly protuberant at posterior extremity. Total length 3.3 mm. Carapace 1.5 mm long. First femur, 2.4 mm; patella and tibia, 2.6 mm; metatarsus, 1.6 mm; tarsus, 1.0 mm. The three males are very similar.

Female. Color and pattern as in male but slightly darker and without the dorsal pair of light spots. Carapace flatter than in male. Clypeus moderately high with a very narrow groove under eyes, rounded and nearly vertical. Anterior median eyes farther apart, but nearer lateral eyes. Abdomen almost like that of male but very blunt behind, partially wrinkled (Fig. 362). Total length 3.2 mm. Carapace 1.4 mm long. First femur, 2.6 mm (other segments missing).

Diagnosis. Male similar to *A. dracus* with clypeus swollen below groove (Fig. 360). The palpus (Fig. 361) very similar to that of *A. dracus* but slightly narrower and hook of radix not bent. The embolus wide, forming a wide, exposed spiral (Fig. 361). Epigynum (Fig. 364) as in *A. maculosus* and *A. dracus*, but it differs from that of *A. dracus* in having the posterior area less swollen, and from that of *A. maculosus* by the longer scape and the internal genitalia. Seminal receptacles small, separated by a diameter; tubes of large diameter forming two tight coils posteriorly, and then narrowing and forming one large loop to enter heavily sclerotized receptacles (Fig. 363). The lack of

banding of third and fourth legs and smooth posterior tip of the abdomen (Fig. 362) also separate this species from *A. dracus*.

Record. Panama Canal Zone. Barro Colorado Isl., 1 ♀, 2 ♂ paratypes collected with type.

ARGYRODES SUBDOLUS O.P.-Cambridge

Figures 365-369; Map 11

Argyroides linguata O.P.-Cambridge, 1898, *Biologia Centrali-Americana*, Araneidea, vol. 1, p. 259, pl. 38, fig. 1. Male holotype from Santa Ana, Guatemala, in the British Museum (Natural History), examined by Levi.

Argyroides subdola O.P.-Cambridge, 1898, *op. cit.*, p. 260, pl. 38, fig. 2. Female holotype from San Antonio, near the city of Guatemala, [Guatemala], in the British Museum (Natural History), examined by Levi. F.P.-Cambridge, 1902, *Biologia Centrali-Americana*, Araneidea, vol. 2, p. 405, pl. 38, fig. 11.

Argyroides obtusus, F.P.-Cambridge, 1902, *op. cit.*, vol. 2, p. 403, pl. 38, fig. 3. Not *A. obtusus* O.P.-Cambridge.

Notes. Specimens in collections have been misidentified as *A. trituberculatus*, *A. obtusus*, and *A. maculosus*. The name *subdulus* is selected rather than *linguatus*. Though *linguatus* has page priority, it has never been used.

Description. Male from Texas. Carapace dusky yellow. Sternum shiny, dusky. Mouthparts, clypeus and palpi dark orange. Abdomen gray, irregularly spotted with silver. Carapace narrow anteriorly and arched in front (Fig. 365). Clypeus high, not overlapping chelicerae, with a short shallow groove. Posterior tip of abdomen extending above, but not much posterior to spinnerets, a small pair of humps present. Total length 2.8 mm. Carapace 1.4 mm long. First femur, 2.5 mm; patella and tibia, 2.8 mm; metatarsus, 1.7 mm; tarsus, 0.9 mm.

Female. Carapace and legs dusky yellow to brown, sternum darker. Abdomen dark gray with irregular streaks and patches of white or silver. Carapace broader than in male. Clypeus moderately high, straight somewhat bulging below groove. Abdomen heavier than that of male, with more conspicuous lateral humps. Posterior tip usually blunt but sometimes extending behind as a three-pointed projection (Fig. 367). Total length 2.6 mm. Carapace 1.2 mm long. First femur, 1.7 mm; patella and tibia, 1.8 mm; metatarsus, 1.2 mm; tarsus, 0.7 mm. Females vary from 2.2 to 2.6 mm.

Diagnosis. Males of *A. subdolus* can readily be separated from others of the *A. cancellatus* group by two teeth on the radix, visible in ventral view (Fig. 366). The embolus forms a large coil and the conductor has a small ventral projection. The long narrow scape of the epigynum (Fig. 369) is diagnostic. The coils of the connecting canals (Fig. 368) are sclerotized and fused as single structures.

Distribution. Texas, Arizona, Mexico, south to Guatemala; Map 11.

Records. United States. Texas. Bell Co.: Temple (L. I. Davis). Hidalgo Co.: Edinburg (S. Mulaik); Hidalgo (L. I. Davis). Leon Co.: Jewett (L. I. Davis). Sutton Co.: 28 mi. E of Sonora (W. J. Gertsch). Travis Co.: near Austin (H. E. Frizzell). *Arizona.* Santa Cruz Co.: Madera Canyon (W. J. Gertsch, L. Hook). *Mexico. Nuevo León:* 24 km S of Monterrey (W. J. Gertsch); Linares (L. I. Davis); Horsetail Falls (W. J. Gertsch). *Hidalgo:* Jacala (L. I. Davis). *Veracruz:* Tecolutla (H. M. Wagner). *Jalisco:* Ajijic (A. F. Archer). *Colima:* Miramar, Manzanillo (F. Bonet). *Michoacan:* Conjumatlan (L. I. Davis). *Distrito Federal:* Tenango (H. Wagner). *Guerrero:* Mexcala (L. I. Davis). *Chiapas:* San Cristóbal de las Casas (C., M. Goodnight); Cintalapa (H. Wagner); Las Cruces (H. Wagner). *Guatemala.* Chichicastenango (C., P. Vaurie).

ARGYRODES DAVISI new species

Figures 370-374; Map 12

Type. Male from Big Tree Vine Association, Cameron County, Texas, Sept. 1936 (L. I. Davis), in the American Museum of Natural History. The species is named after the collector.

Description. Male. Carapace grayish brown, yellow anteriorly with a pair of brown longitudinal lines behind eyes and a pair of transverse markings connected to lines. Anterior legs yellowish proximally, becoming dark brown toward ends of femora, other segments dark. Posterior legs yellow with faint reddish brown annulations. Sternum yellow, brown posteriorly and in median line. Abdomen light gray, mostly covered with silvery spots. Carapace short, evenly raised to posterior eye region, where it is wider than in most species, terminating bluntly in front of posterior eyes. Clypeus high with groove under anterior median eyes; groove thickly covered with short, dorsally curved setae; clypeus bulging in front of and below base of chelicerae (Fig. 370). Anterior median eyes on anterior face of head; only

slightly larger than other eyes; separated by less than a diameter, farther from laterals and posterior medians. Eyes of posterior row slightly recurved; posterior medians separated by nearly three diameters, not so far from laterals. Abdomen short and wide, with prominent lateral humps above spinnerets, and a median blunt posterior hump ventral to laterals. Total length 2.8 mm. Carapace 1.4 mm long. First femur, 2.2 mm; patella and tibia, 2.5 mm; metatarsus, 1.5 mm; tarsus, 0.7 mm.

Female. Carapace and sternum uniform grayish brown; anterior legs a little paler than in male, terminal segments annulate. Abdomen darker than in male, dorsum mostly without silver spots. Carapace similar to that of male without modified clypeus or widened cephalic region; anterior median eyes on anterior surface as in male. Clypeus high with wide shallow groove under eyes. Anterior median eyes farther apart than in male, no larger than posterior medians; other eyes all nearer each other than in male. Abdomen wider and higher than in male with humps exaggerated and lateral humps pointed (Fig. 372). Total length 2.3 mm. Carapace 0.8 mm long. First femur, 1.4 mm; patella and tibia, 1.4; metatarsus, 0.7 mm; tarsus, 0.5 mm.

Variation. The female from Chiapas has the tube of the genitalia unevenly coiled, and the coils are at an acute angle to the genital groove rather than in the longitudinal axis.

Diagnosis. *Argyodes davisii* is smaller than, but related to, *A. leonensis* and *A. ululans*. The shape of the male clypeus (Fig. 370) separates them. The cymbium of the male palpus is short. The radix is long but unusually narrow, concave on anterior margin, ending in a blunt recurved tip. The embolus forms a very narrow spiral under radix (Fig. 371). The epigynum is small with a moderately long pointed scape (Fig. 374). Outline of fossae visible only on anterior margin. Seminal receptacles very large, more widely separated than in *A. leonensis*, with narrow tubes forming several tight, even, horizontal spirals before entering receptacles (Fig. 373).

Distribution. Texas to Chiapas; Map 12.

Records. *United States.* Texas. Cameron Co.: 1 ♀ paratype, 1 juv. collected with holotype. *Mexico.* Chiapas: Finca Santa Marta, near Huehuetán, July 31, 1950, ♀ (C., M. Goodnight).

ARGYRODES AMATES new species

Figures 375-379; Map 12

Type. Female from Los Amates, Guatemala, 1908 (Kellerman), in the Museum of Comparative Zoology. The specific name is a noun in apposition after the type locality.

Description. Male. Carapace, sternum, legs brownish yellow. Abdomen gray, darker posteriorly, covered with rather large, bright silvery plates. Carapace very low, rounded in front, broad at lateral eyes. Clypeus low with deep, open groove under eyes, bulging under groove anterior to eyes and chelicerae (Fig. 375). Anterior median eyes a little larger than others. Posterior eyes widely and equally spaced. Abdomen extended beyond spinnerets, widened above just behind spinnerets, but with no real humps, then narrowed to form a blunt posterior tip. Total length 3.2 mm. Carapace 1.5 mm long. First femur, 2.7 mm; patella and tibia, 3.2 mm; metatarsus, 2.0 mm.

Female. Carapace and legs similar to those of male but more yellowish. Abdomen yellow with smaller silvery spots, a large gray basal area on dorsum, and only ventral half of posterior side dark gray, with a pair of silver spots above spinnerets. Carapace not as low as in male. Clypeus low, nearly straight. Abdomen high with a pair of low lateral humps and a very blunt posterior tubercle (Fig. 377). Total length 2.3 mm. Carapace 0.9 mm long. First legs missing.

Diagnosis. The bulge of the male clypeus (Fig. 375) distinguishes *A. amates* from related species. The palpus has a short radix with straight tip. The conductor as in *A. caudatus*, but with dorsal arm extended ventrally as a large fleshy tooth (Fig. 376). The epigynum of female with short, pointed scape (Fig. 379). The seminal receptacles are large. The ducts distinguish this species from *A. caudatus* and other related species. There are three spirals, the one closest to the seminal receptacles being the largest. The proximal portion of duct is wavy and is enclosed by the spiralled portion (Fig. 378).

It is not certain that the male and female belong together. Both have a dark patch on the abdomen posterior to the spinnerets, enclosing two light spots, side by side.

Distribution. Chiapas, Guatemala; Map 12.

Records. Mexico. Chiapas: Tenejapa, July 22, 1950, ♂ (C. Goodnight).

ARGYRODES PERUENSIS new species

Figures 380-384; Map 12

Type. Male from Santa Teresa on the Río Huallaga, 600 m elev., Huánuco, Peru, Aug. 1954 (F. Woytkowski), in the American Museum of Natural History. The specific name is an adjectival form of Peru.

Description. Male. Carapace dusky yellow with gray infusions and a median longitudinal black line. Femora pale near body, becoming dusky orange distally; distal leg segments dusky orange. Sternum black anteriorly, yellow posteriorly. Abdomen yellowish white with some irregular dark gray lines, all dark gray behind and at sides of spinnerets, and gray at posterior dorsal tip. Large silvery spots are scattered on dorsum, a pair above spinnerets, and several under tip. Carapace unusually low and wide. Clypeus very high, nearly straight, with wide shallow groove in middle (Fig. 380). Anterior median eyes larger than others, separated by less than a diameter, nearer posterior median eyes, which are separated by nearly two diameters. Abdomen rounded, ending in small bluntly pointed, almost ventral, tubercle. Total length 2.2 mm (abdomen damaged). Carapace 1.1 mm long. First femur, 2.0 mm; patella and tibia, 2.2 mm; metatarsus, 2.0 mm; tarsus, 1.0 mm.

Female. Carapace dusky yellow, gray on margin, in midline, and along cephalic grooves. Legs as in male except not so pale near body. Sternum black and yellow. Abdomen similar to male, but with dorsum dark gray at base; and silver on posterior under tubercle. Carapace similar to that of male. Clypeus moderately high with wide groove under eyes, nearly straight with anterior median eyes projecting over clypeus. Eyes similar to those of male but anterior medians a little farther apart. Abdomen nearly spherical with small posterior tubercle about midway between spinnerets and highest point of abdomen (Fig. 382). Total length 2.2 mm. Carapace 0.8 mm long. First femur, 1.3 mm; patella and tibia, 1.3 mm; metatarsus, 0.9 mm; tarsus, 0.6 mm.

Variation. A second male is 2.5 mm in total length and is darker.

Diagnosis. The spherical abdomen with small posterior tubercle, and dark gray-silver coloration distinguish *A. peruensis* from related species. The radix of the male palpus is wide, reaching almost to ectal side of cymbium, and has a small hook on anterior face (Fig. 381). The embolus forms a much wider spiral than

that of *A. caudatus*. The epigynum is small with a moderately wide, short fossa, bordered anteriorly with heavily sclerotized rims that fuse in center as a blunt, somewhat protruding scape (Fig. 384). The openings are small, at lateral ends of the fossae. The tubes spiral twice tightly to midline, then the spiral reverses, with two more loops. There are several large loops on the side of the seminal receptacles, before tubes enter them (Fig. 383). The receptacles are large, heavily sclerotized, spherical, separated by less than a diameter.

Records. Peru. Huánuco: Río Huallaga, ♀ ♂ paratypes collected with type.

ARGYRODES SUBFLAVUS new species

Figures 385, 386; Map 12

Type. Male from Divisoria, Huánuco, Peru, 1700 m elev., Oct. 1946 (F. Woytkowski), in the American Museum of Natural History. The specific name is a Latin adjective meaning yellowish.

Description. Male. Carapace golden yellow, infused with gray in posterior part. Clypeus, palpi, mouthparts and femora of legs golden yellow. Distal segments of legs infused with gray. Sternum gray. Abdomen cream with a gray patch on posterior part of dorsum and a narrow gray streak, bordered with silvery flecks, extending down each side to spinnerets. A narrow curved band of silvery flecks on each side in anterior third and a short band on each side of dorsum above spinnerets. Venter grayish with a central silvery spot. Carapace low, narrow, evenly and slightly inclined from posterior to anterior edge. Clypeus moderately high with very large, wide, open groove covered by setae (Fig. 385). Beneath groove, clypeus bulges, narrows and protrudes in front above chelicerae. Anterior median eyes much larger than others, and as in *A. argyroides* well in front of other eyes, a little over a radius apart, well over a diameter from posterior median eyes. Posterior row of eyes strongly recurved. Median ocular area square. Abdomen rather slender, extending behind spinnerets. The posterior tip is rounded. Total length 3.0 mm. Carapace 1.4 mm long. Legs missing.

Diagnosis. The coloring, shape of clypeus (Fig. 385), size and position of eyes are diagnostic. The palpal structure is similar to that of *A. striatus*, but differs in that the radix reaches almost to the ectal side of palpus, and has a median anterior tooth (Fig. 386). The broad embolus lies in a wide spiral seen only through

the radix. The conductor is large, curved around the inner terminal part of the cymbium, and has a stout terminal tooth that protects the tip of the embolus. The female is unknown.

Records. Peru. Huánuco: Divisoria, ♂ paratype collected with type.

ARGYRODES CONVOLUTUS new species

Figures 387-389; Map 12

Argyrodes spinosus, Keyserling, 1891, Die Spinnen Amerikas, Brasilianische Spinnen, p. 214, in part; specimens from Espírito Santo, Brazil, collected by Göldi. Not *A. spinosus* Keyserling, 1884.

Type. Female from 69 km east of Tingo María, Dept. Huánuco, Peru, Oct. 5, 1954 (E. I. Schlinger, E. S. Ross), in the California Academy of Sciences. The specific name is a Latin adjective, describing the loops in the female genitalia.

Description. Female. Carapace yellowish brown, legs paler and annulate. Abdomen gray, with darker gray patches and streaks and finely dotted with silvery flecks. Carapace wide, narrowed and rounded in front; clypeus almost straight, moderately high with anterior median eyes projecting over shallow groove. Abdomen high, not extending behind spinnerets, with a pair of blunt, postero-lateral humps, and a median postero-dorsal protuberance bearing two pairs of shiny points (Fig. 387). Total length 2.4 mm. Carapace 0.9 mm long. First femur, 1.5 mm; patella and tibia, 1.5 mm; metatarsus, 0.7 mm; tarsus, 0.6 mm.

Diagnosis. Female with large epigynum similar to that of *A. dracus*, but scape blunter, more posteriorly directed, rebordered, and tip spoon-shaped (Fig. 389). Posterior part only slightly projecting ventrally. The seminal receptacles are large, connecting canals of same diameter throughout and tightly spiralled with from five to eight loops (not always the same on the two sides of the same specimen) surrounding a series of smaller loops of the duct leading to the openings (Fig. 388). The presence of the scape separates females from those of *A. affinis*, and the internal genitalia from *A. dracus*. The male is not known. This species may be the female of *A. spinosus*.

Distribution. Central America to southeastern Brazil, apparently absent in Panama; Map 12.

Records. Guatemala. (F. D. Godman, BMNH). British Guiana. Upper Essequibo Riv., Onora Region, Dec. 20, 1937 (W. G. Hassler). Peru. Huánuco: Divisoria, 1700 m elev., Sept. 1946 (F. Woytkowski). Brazil. Espírito Santo: (E. Göldi, BMNH).

ARGYRODES LEONENSIS new species

Figures 390-394; Map 12

Type. Male from Horsetail Falls, Nuevo León, Mexico, June 11, 1936 (A. M., L. I. Davis), in the American Museum of Natural History. The species is named for the type locality.

Description. Male. Carapace, palpi and sternum chestnut brown, legs yellow. Abdomen dark gray with a longitudinal silver stripe on each side. Carapace low, wide in front. Eyes small, anterior medians slightly larger than others, posterior eyes separated by slightly more than two diameters, in a slightly recurved row if viewed from above. Clypeus high, slanting forward under anterior median eyes, forming a triangular lip (as viewed from above) over deep cleft. Clypeus bulging below cleft but scarcely overhanging chelicerae, partially divided by a median furrow (Fig. 390). Cleft somewhat obscured by setae. Abdomen elongate, extending far behind spinnerets, with low lateral humps midway between spinnerets and tip; tip blunt with wrinkled cuticle. Total length 4.6 mm. Carapace 1.7 mm long. First femur, 3.7 mm; patella and tibia, 4.1 mm; metatarsus, 2.6 mm.

Female with carapace and sternum chestnut brown, legs and abdomen reddish brown with a large silvery spot on each side posteriorly. Abdomen shorter and higher than that of male, sometimes rather pointed behind (Fig. 392). Total length 3.5 mm. Carapace 1.3 mm long. First femur, 1.8 mm; patella and tibia, 1.8 mm; metatarsus, 1.1 mm; tarsus, 0.7 mm.

Diagnosis. The shape of the male clypeus (Fig. 390) separates *A. leonensis* from *A. davisii* and *A. peruensis*. The palpus with the long, narrow radix, ending in a short, blunt, recurved point (Fig. 391) separates the males from *A. ululans*. The embolus is slender, forming a very wide spiral. The conductor is large, more heavily sclerotized than in related species. The tegulum shows only a small portion of seminal duct (Fig. 391). The epigynum is fairly large, somewhat raised, dark, with broad, pointed, re-bordered scape almost dividing the fossae (Fig. 394), and separating females from near relatives except *A. davisii*. The lateral openings are in deep fossae, leading into poorly sclerotized connecting canals tightly and evenly coiled around the straight sclerotized distal portion that leads to the seminal receptacles (Fig. 393).

Distribution. Mexico; Map 12.

Records. Mexico. Nuevo León: Horsetail Falls, June 11, 1936, ♂, 2 ♀ paratypes (A. M., L. I. Davis); Nov. 27, 1937, ♀ (L. I.

Davis, Brown). *Chiapas*: Tonalá, Aug. 1909, ♀ ♂ (A. Petrunkevitch).

ARGYRODES ALTICEPS Keyserling

Figures 395-399; Map 12

Argyrodes alticeps Keyserling, 1891, Die Spinnen Amerikas, Brasilianische Spinnen, p. 210, pl. 8, fig. 151. Male holotype from Espírito Santo, Brazil, in the British Museum (Natural History), examined by Levi. Simon, 1894, Histoire Naturelle des Araignées, p. 499.

Description. Male. Carapace, sternum, legs yellow. Abdomen grayish white with a few gray streaks and small silvery flecks. Cephalic region bearing anterior median and posterior median eyes, elongate, elevated and narrowed with parallel sides (Fig. 395). All median eyes anterior to lateral eyes. Median eyes forming a square. Abdomen extending a little behind and above spinnerets, widest just behind spinnerets with a pair of low lateral humps. Posterior tip of abdomen blunt. Total length 2.6 mm. Carapace 1.2 mm long. First femur, 2.3 mm; patella and tibia, 2.5 mm; metatarsus, 1.7 mm.

Female. Carapace orange-yellow with gray infusions, sternum a little darker. Legs pale yellow with first patella and tibia darker. Abdomen almost white with dark gray or tan on basal part of dorsum, a pair of oblique streaks near tip, lower sides and most of venter. Abdomen covered with fairly large silver spots. Clypeus as in other species, with a shallow groove under anterior median eyes. Median eyes forming a square as in male. Abdomen only moderately high and extended behind spinnerets with a pair of low lateral humps. Tip of abdomen bluntly tapered behind spinnerets (Fig. 397). Total length 2.3 mm. Carapace 1.0 mm long. First femur, 1.6 mm; patella and tibia, 1.6 mm; metatarsus, 1.0 mm; tarsus, 0.5 mm.

Figures 395, 396 were prepared from the type specimen.

Diagnosis. The projection of the eye region of the male (Fig. 395) is diagnostic. The radix is long with the tip recurved, bluntly pointed. The embolus forms a wide, heavy spiral (Fig. 396). The female has a large bulging epigynum with a blunt median anterior swelling. A long, slender sclerotized scape projects ventrally from the shallow fossa. The openings are lateral in fossae (Fig. 399). The seminal receptacles are large. Narrow tubes winding from the openings posterior to receptacles, then forming a lateral loop before entering the receptacles on the ventral side near their posterior lateral margin (Fig. 398). The

genitalia separate the species from *A. acuminatus*. Males and females were not collected together and it is not absolutely certain that they belong together.

Records. Paraguay. Alto-Paraná: Taguararapa, 2 ♂ ; Apa, 2 ♀ .

ARGYRODES AFFINIS O.P.-Cambridge

Figures 400-405; Map 12

Argyroides affinis O.P.-Cambridge, 1880, Proc. Zool. Soc. London, p. 337, pl. 30, fig. 16. Male and female syntypes from Paraná, Brazil, in the Hope Department of Entomology, Oxford University, examined by Levi.

Description. Male from Santa Catarina, Brazil, (compared with type by Levi). Carapace, tarsi of palpi, sternum and mouthparts light brown, infused with gray. Legs and proximal segments of palpi yellow. Abdomen brown, almost covered on dorsum except over heart with silver, and silvery spots scattered elsewhere. Carapace short, cephalic part wide, bearing lateral eyes on low prominence. Clypeus high below shallow groove, bulging considerably beyond, but not over base of chelicerae. Thick covering of setae over groove (Fig. 400). Anterior median eyes a little larger than others, separated by nearly a diameter, farther from posterior medians and anterior laterals. Posterior median eyes separated by nearly three diameters. Abdomen highest and widest at spinnerets, greatly extended behind and a little above spinnerets, ending in blunt point (Fig. 402). Total length about 5.0 mm. Carapace 1.4 mm long. Anterior legs missing.

Female from São Paulo, Brazil. Carapace and sternum light brown infused with gray, carapace becoming yellow on anterior sides and clypeus. Legs yellow, grayish near joints; last two segments of palpi brown. Dorsum of abdomen yellow with silvery spots, a longitudinal dark gray line, and four brown and gray cross bars. Lower sides, venter, and posterior yellowish gray with scattered dull silvery flecks. Carapace narrow. Clypeus nearly straight, a little rounded ventral to deep groove under eyes, fairly high. Anterior median eyes a little smaller and more widely separated than in male and much closer to anterior lateral eyes. Abdomen extended behind spinnerets, widest behind spinnerets, with a pair of low lateral humps and a low posterior extension (Fig. 403) (abdomen damaged). Total length 2.2 mm. Carapace 0.9 mm long. Anterior legs missing.

Figures were prepared from the type specimens.

Variation. A second male from Santa Catarina has abdomen shorter. A third male, only 4.0 mm long, from same area, has a broad dark gray band on dorsum, and posterior side dark gray with a pair of silvery spots above spinnerets. The blunt tip shows indication of bifurcation.

Diagnosis. *Argyrodes affinis* is a large species. The male has a high, bulging clypeus and a broad eye region (Fig. 400). The palpus, similar to that of *A. striatus*, has the radix shorter and with a very concave anterior margin, ending in a much shorter, ventrally curved tooth (Fig. 401). The embolus is slender, forming a narrow spiral, visible only through radix. The conductor is lying entirely within the cymbium, large, terminating in a median, blunt, leaf-like part and an outer part with heavily sclerotized margin. The epigynum separates this species from others; it has a large, wide fossa with a transverse anterior margin, the median part of which projects as a ventral lip. A large lateral opening and three spirals are visible through the fossa wall on each side (Fig. 405). The seminal receptacles are rather small, joined to the openings by tubes forming four spirals on each side, without lateral or anterior loops (Fig. 404).

Distribution. Southern Brazil; Map 12.

Records. *Brazil.* São Paulo: São Paulo, 700-800 m elev., Dec. 1945, ♀ (H. Sick). *Paraná:* ♀ ♂ (O.P.-Cambridge, 1880). *Santa Catarina:* Nova Teutonia, lat 27°11'S, long 52°23'W, 3 ♂ (F. Plaumann, SMF).

ARGYRODES RIGIDUS new species

Figures 410-412; Map 12

Type. Female from Teresópolis, Est. Rio de Janeiro, Brazil, 900-1100 m elev., Nov. 7-9, 1945 (H. Sick), in the American Museum of Natural History. The specific name is a Latin adjective meaning "hard" or "stiff" referring to the cuticle of the female fossa.

Description. Carapace, mouthparts, and sternum pale reddish brown with some gray. Legs pale yellow, heavily banded with red and brown. Abdomen tan speckled with brown, red, and dull silvery spots, and with long black streaks on the sides and near tip; venter and posterior with a reddish cast. Another female is darker with abdomen mostly dull black streaked with reddish and silvery spots. Clypeus only moderately high, rounded to ventral edge under groove. Anterior median eyes largest, well separated; median eyes forming a square; lateral eyes almost

contiguous. Sternum very wide. Abdomen with low anterior dorsal humps, a pair of posterior lateral humps, and a low posterior median hump (Fig. 410). Total length 2.4 mm. Carapace 0.9 mm long. Anterior legs missing.

Diagnosis. *Argyrodes rigidus* is similar to *A. acuminatus* Keyserling, with the epigynum less swollen, and the fossa far wider (Fig. 412). The seminal receptacles are spherical, heavily sclerotized with tubes on each side forming five or six uneven posterior and lateral spirals between openings and receptacles (Fig. 411). However, their exact course is difficult to follow.

The male is unknown. This may be the female of *A. striatus*.

Records. *Brazil. Rio de Janeiro:* Teresópolis, 900-1100 m elev., March 1946, ♀ paratype (H. Sick).

ARGYRODES STRIATUS Keyserling

Figures 408, 409; Map 12

Argyrodes striatus Keyserling, 1891, Die Spinnen Amerikas, Brasilianische Spinnen, p. 213, pl. 8, fig. 154. Male type from Espírito Santo, Brazil, in the British Museum (Natural History), examined by Levi. Göldi, 1892, Mitt. Osterlande, neue Folge, vol. 5, pp. 224, 228.

Description. Male from Minas Gerais, Brazil. Carapace dusky yellow, clearer anteriorly. Legs pale yellow with light brown annulations. Sternum dusky yellow anteriorly, gray posteriorly. Abdomen grayish white with irregular dark gray markings and nearly covered on sides and dorsum with large silvery flecks. Posterior tip pale. Carapace low, wide, with cephalic part gradually elevated and wide. Eyes small, nearly equal, widely separated except contiguous lateral eyes. Anterior median eyes more than a diameter apart. Posterior median eyes nearly three diameters apart and nearly as far from anterior medians and posterior laterals. Clypeus rather low, straight beneath anterior median eyes to a shallow cleft, then jutting forward, rounded and narrowed in front of chelicerae (Fig. 408). Abdomen somewhat elongate with a pair of lateral tubercles on dorsum posterior to spinnerets, and a long median posterior tubercle ending in a pair of blunt tips. Total length 3.0 mm. Carapace 1.2 mm long. First femur, 1.7 mm; patella and tibia, 2.0 mm; metatarsus, 1.0 mm; tarsus, 0.6 mm.

Variation. A second male from Est. Santa Catarina, Brazil, is much darker, having carapace brown. The type has the cymbium of the palpus truncate (Fig. 409) and there is a slight possibility that two species are confused. The female is unknown; it may be *A. rigidus*.

Diagnosis. The shape of the clypeus (Fig. 408) is somewhat similar to *A. affinis*. The palpus is broad. The radix is wide, rounded posteriorly, completely covering the embolus; with a long anterior spur curved ventrally at tip (Fig. 409). The large, conspicuous conductor has two parts, one rounded at its tip, the other bearing two irregular points. The embolic spiral is moderately wide, formed by a very slender whip-like duct. The female is unknown.

Natural History. Göldi, 1892, reports finding the species in virgin forest within several days travel of São Eduardo [Santo Eduardo] on the Itabapana, border river between the provinces Rio de Janeiro and Espírito Santo. This probably should be the type locality.

Distribution. Southern Brazil; Map 12.

Records. *Brazil. Minas Gerais:* Caraça, ♂ (E. Gounelle, MNHN). *São Paulo:* Mata do Governo, Inst. Botanica, São Paulo, March 4, 1959, ♂ (L. Lane). *Santa Catarina:* Nova Teutonia, lat 27°11', long 52°23', 1930-1940, ♂ (F. Paumann, SMF).

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